Amended Expert Report of Edward A. Snyder, Ph.D

(Dec. 6, 2013)

Cisneros Exhibit 7

REDACTED VERSION

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN JOSE DIVISION

IN RE HIGH-TECH EMPLOYEE ANTITRUST LITIGATION	**Master Docket No. 11-CV-2509-LHK**
THIS DOCUMENT RELATES TO: ALL ACTIONS	

AMENDED EXPERT REPORT OF EDWARD A. SNYDER, PH.D.

December 6, 2013

TABLE OF CONTENTS

I. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

1. I am Dean of the Yale School of Management and the William S. Beinecke Professor of Economics and Management. I assumed this position on July 1, 2011. From July 1, 2001 until June 30, 2010, I was the George Shultz Professor of Economics at the University of Chicago Booth School of Business and served as Dean of the School.

2. I began my professional career in July 1978 with the Antitrust Division of the U.S. Department of Justice as a Staff Economist to the National Commission to Review Antitrust Laws and Procedures. I worked as a Staff Economist in the Antitrust Division on a full- and part-time basis until 1984, working on antitrust investigations in a wide range of product markets involving manufacturers, service providers, distributors, and retailers. Since then I have worked in antitrust enforcement, conducted research on antitrust policy and business practices, taught courses in related areas, and consulted on antitrust matters.

3. I earned my M.A. in Public Policy and Ph.D. in Economics from the University of Chicago. My Ph.D. thesis focused on price fixing and examined enforcement of Section 1 of the Sherman Act by the U.S. Department of Justice; this involved reviewing over 200 price-fixing conspiracies. I began my academic career in 1982 at the University of Michigan Business School and over time was promoted to Professor of Business Economics and Public Policy. My primary expertise is Industrial Organization, which is the field of economics that deals most directly with pricing and distribution of products, the interactions among competitors, contracting practices, and antitrust issues. My research draws on relevant theory, investigates real-world behavior, and is predominantly empirical in nature. I have

conducted three scholarly projects on antitrust policy and enforcement with Thomas E. Kauper, Professor of Law at the University of Michigan Law School and former Assistant Attorney General in charge of the Antitrust Division, U.S. Department of Justice. I have been an editor of the *Journal of Law and Economics*.

4. I have analyzed economic and business issues in a rich variety of settings. I consider myself to be an expert on pricing practices, distribution of products, vertical integration and contracting, and industrial organization in general. I also consider myself to be an expert on allegations of price fixing and collusive agreements, monopolization, and other anti-competitive practices.

5. I have been retained by counsel for Intel Corp., and have directed employees of Analysis Group, Inc. (Analysis Group), an economic research and consulting firm, to assist me in this assignment. I am being compensated at an hourly rate of $1,000 for time spent on the matter. In addition, I receive compensation based on the professional fees of Analysis Group. No compensation is contingent on the nature of my findings or on the outcome of this litigation.

6. I include my curriculum vitae with my report as Appendix A. A list of cases in which I have provided testimony in the previous four years appears as Appendix B.

II. ALLEGATIONS, ASSIGNMENT AND MATERIALS REVIEWED

A. Allegations

7. A consolidated amended complaint was filed on September 2, 2011 on behalf of a proposed class of salaried employees of Adobe Systems, Inc. (“Adobe”), Apple Inc. (“Apple”), Google

Inc. ("Google"), Intel Corp. ("Intel"), Intuit Inc. ("Intuit"), Lucasfilm Ltd. ("Lucasfilm"), and Pixar (collectively, "Defendants").[1]

8. Plaintiffs allege that:

- Defendants conspired to fix and suppress employee compensation by entering into certain agreements between pairs of Defendants that prohibited cold calling of each party's employees by the other party.[2,3]
- The agreements suppressed the compensation of Defendants' employees by reducing information about employment opportunities and about compensation at the Defendant firms.[4]
- The agreements suppressed the compensation of all Defendants' employees because suppression of the compensation of directly affected employees was propagated to other employees through compensation structures designed to preserve internal equity.[5]

9. On October 24, 2013, the Court granted Plaintiffs' Supplemental Motion for Class Certification and certified a Class of "technical" employees defined as:

> All natural persons who work in the technical, creative, and/or research and development fields that are employed on a salaried basis in the United States by one or more of the following: (a) Apple from March 2005 through December 2009; (b) Adobe from May 2005 through December 2009; (c) Google from March 2005 through

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1 Consolidated Amended Complaint, *In Re: High-Tech Employee Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, September 2, 2011 (henceforth, "Complaint").

2 Plaintiffs allege that the conspiracy consists of the following six bilateral agreements between Defendants: Adobe-Apple, Apple-Pixar, Apple-Google, Google-Intel, Google-Intuit, and Lucasfilm-Pixar (Complaint, ¶ 108).

3 The Apple-Pixar and Lucasfilm-Pixar agreements also allegedly included provisions that the companies notify each other when making an offer to another's employees and provisions that, when offering a position to another company's employee, neither company would counteroffer above the initial offer (Complaint, ¶¶ 59-61).

4 Complaint, ¶¶ 46-48.

5 Complaint, ¶¶ 50-54.

> December 2009; (d) Intel from March 2005 through December 2009; (e) Intuit from June 2007 through December 2009; (f) Lucasfilm from January 2005 through December 2009; or (g) Pixar from January 2005 through December 2009. Excluded from the Class are: retail employees; corporate officers, members of the boards of directors, and senior executives of all Defendants.[6]

B. Assignment

10. I have been asked by Counsel for Intel to address four questions regarding the alleged bilateral agreement between Google and Intel ("Google-Intel Agreement") and the five alleged bilateral agreements between Defendants other than Intel (collectively, "Six Agreements"). First, I have been asked to assess whether these Six Agreements had anti-competitive effects on compensation for Class members at Intel, Google or other Defendant firms. Second, I have been asked to assess whether the Google-Intel Agreement had legitimate pro-competitive justifications. Third, to the extent that I find that the Google-Intel Agreement had legitimate pro-competitive justifications, I have been asked to assess whether it was unnecessarily broad. Fourth, I have been asked to address whether Plaintiffs' claim that Intel was part of an overarching conspiracy with the other Defendants makes sense from an economic perspective. As part of my assignment, I have been asked to review the expert reports of Plaintiffs' experts Dr. Matthew Marx, Dr. Edward Leamer, Dr. Alan Manning, and Dr. Kevin Hallock and evaluate their analyses and conclusions where relevant to my analysis.[7]

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[6] Order Granting Plaintiffs' Supplemental Motion for Class Certification, *In Re: High-Tech Employees Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, October 24, 2013, pp. 10-11.

[7] Expert Report of Matthew Marx, *In Re: High-Tech Employees Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, No. 11-CV-2509-LHK, October 28, 2013 (henceforth,

C. Materials Reviewed

11. In reaching my conclusions, I have relied on my research and experience, documents and data produced in discovery and publicly available information. I include in Appendix C the list of the materials that I have reviewed in the course of executing my assignment. I may update, refine, or revise my opinions if relevant new information comes to light.

III. APPROACH

12. I understand that the parties have different recollections regarding the timing, scope and terms of the Google-Intel Agreement. For the purpose of the analyses described in this report, I have been asked to assume as true Plaintiffs' allegations that: (i) the Six Agreements constitute the alleged conspiracy cited in the Complaint and (ii) the Google-Intel Agreement prohibited Google and Intel from cold calling the other's employees.

13. I approach my assignment as follows.

i. First, I consider the potential anticompetitive effects of the alleged restrictions on cold calling Defendants' employees.

ii. Second, I consider inter-firm collaboration in high technology industries, including specifically the collaborations between Google and Intel, and the reasons why collaborating firms might agree not to cold call each other's employees.

iii. Third, I consider the type of agreement that an employer such as Intel would have entered into if its intention had been to suppress class member compensation, and I

"Marx Report, October 28, 2013"); Expert Report of Edward E. Leamer, Ph.D., *In Re: High-Tech Employees Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, No. 11-CV-2509-LHK, October 28, 2013 (henceforth, "Leamer Report, October 28, 2013"); Expert Report of Alan Manning, Ph.D., *In Re: High-Tech Employees Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, No. 11-CV-2509-LHK, October 28, 2013 (henceforth, "Manning Report, October 28, 2013"); Expert Witness Report of Kevin F. Hallock, *In Re: High-Tech Employees Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, No. 11-CV-2509-LHK, October 27, 2013 (henceforth, "Hallock Report, October 27, 2013").

compare that type of agreement to the bilateral no-cold-call agreements that Defendants actually entered into.

14. Important to my approach are two fundamental insights about the nature of the alleged conspiracy.

i. First, the alleged conspiracy not to cold call particular sets of employees, even if accepted, was not a conspiracy to reduce employment or hiring.

ii. Second, and related, a proper economic analysis of the potential effects on compensation of the alleged restrictions on cold calling must take into account both the potentially adverse effects of the restrictions on some Class members and the potentially positive effects of attempts to recruit different Class members and other individuals who were not subject to the restrictions.

15. The first point above is essential to the recognition that the Six Agreements did not involve the exercise of market power and so cannot have had meaningful anticompetitive effects. The second point is similarly essential in understanding that, while the alleged conspiracy could have adverse effects on a small number of individuals, it would also be expected to have positive effects on others.

IV. SUMMARY OF PRINCIPAL CONCLUSIONS

16. In this section, I summarize my four principal conclusions and provide explanations for each. While presented separately below, they fit into an overall whole. Central to the set is the fundamental point that, even if Plaintiffs' allegations are accepted, the "no cold calling agreements" ("NCC agreements") do not constitute agreements to restrict employment or hiring. Thus, while they could have effects on individual members of the Class, those effects do not aggregate into systematic and meaningful anticompetitive effects. Indeed, along with

potential adverse effects on some individuals, the NCC agreements would also have positive effects on other individuals, as explained below.

17. The analysis of potential anticompetitive harm could end there. Plaintiffs' experts, however, forward claims of substantial and meaningful anticompetitive harm based on an argument that: (i) the NCC agreements restricted the flow of information about compensation, and (ii) absent the restrictions, the additional information associated with particular cold calls would have disrupted existing compensation structures within the firms and raised compensation generally.

18. This "tail wags the dog" logic cannot be supported and is incomplete. The claim that Intel not cold calling Google employees would actually change the equilibrium amount of information about compensation among Google employees lacks support given (i) the narrow scope of the restrictions relative to the breadth of the labor market for technical employees, and (ii) the alternative means by which Google employees acquire information. Cold calling or not cold calling particular employees would have no meaningful effects on the compensation structures as a result of a change in equilibrium information.

19. Yet even if one were to consider such a possibility, any "tail wagging the dog in one direction" claim, i.e., an analysis of how Defendants not cold calling some employees would have substantial negative effects on compensation of all Defendant employees in a robust labor market, cannot stand alone. Such a claim must be accompanied by an analysis of how alternative efforts by Defendants to recruit employees would have substantial positive effects on employee compensation in the same robust labor market. The need for symmetry and completeness in the analysis derives, again, from the nature of the alleged NCC agreements,

which are not restrictions on cold calling generally, recruiting efforts, total employment, or hiring.

20. *First, the Six Agreements, including the Google-Intel Agreement, could not have had meaningful anticompetitive effects on class-wide compensation.* To suppress compensation, employers must have market power and exercise that market power, i.e., restrict the number of employees and hiring. The alleged conspiracy affected how Defendants might recruit a minimal set of potential employees. This could have resulted in some individuals missing out on more attractive employment opportunities and other individuals benefiting from being recruited. The result would be a mix of effects on individual employees. This mix of effects, however, is very different from an overall and meaningful anticompetitive effect on the market.

21. As indicated above, Plaintiffs' experts argue that the NCC agreements resulted in company-wide compensation suppression due to a loss of critical information.[8] While information about an outside employment opportunity that is specific to an individual could affect that individual's compensation, a threshold problem with the information discovery claim is the lack of evidence to prove how a restriction on one means of recruiting a small number of potential employees could reduce the overall level of information relevant to broad groups of individuals.[9] Such broadly relevant information, as the record indicates, is widely available

[8] Plaintiffs' expert Dr. Leamer, for example, suggests the following hypothesis to explain the initial suppression of compensation: "The hypothesis that underlies my study of the defendants' payroll records is that the non-compete agreements prevented a burst of actual cold calls from happening and also eliminated the threat of future cold calls between the agreeing parties." Leamer Rebuttal Report, July 12, 2013, p. 1.

[9] Information about the compensation of software engineers with an undergraduate degree and zero years of experience is an example of information that is relevant to broad groups of individuals. Information about the

through channels other than cold calls to a small set of individuals. While a suppressed cold call that would have conveyed employee-specific information could have mattered to the individual, any effect would not extend beyond that individual and, potentially, others with virtually identical skills and knowledge.

22. The other problem with the argument forwarded by Plaintiffs' experts is its lack of completeness. For example, whatever adverse effects on Intel employees resulted from missing cold calls from Google, the analysis would have to also consider the positive effects on Intel employees that resulted from receiving cold calls from, say, Adobe. In this regard, it is important to recognize that the NCC agreements covered a small percentage of the class members' potential employers, did not affect the many ways other than cold calls that class members had to learn about outside employment opportunities, and did not affect cold calling by any of the scores of other potential employers with whom Intel and the other Defendants compete for the services of class members.

23. The NCC agreements also did not reduce the overall amount that each Defendant could cold call. Each NCC agreement restricted where a given Defendant could cold call, but did not restrict how much that Defendant could cold call. Plaintiffs do not allege that any other Defendant (i.e., Apple, Adobe, Pixar, Lucasfilm and Intuit) agreed not to cold call Intel as part of the alleged conspiracy.[10] Therefore, while the Google-Intel Agreement, as I have

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compensation of an individual with a unique set of skills is an example of information that is specific to that individual.

[10] I understand that there is evidence that Intel and Apple had an agreement for part of the alleged conduct period not to recruit a small number of each other's employees. I further understand that in 2008 Intel agreed not to cold call Pixar's employees, but that Pixar was free to cold call Intel's employees. Intel's Objections and Amended and Supplemented Responses to Plaintiffs' Second Set of Interrogatories, *In Re: High-Tech Employee Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master

assumed it, prohibited Google and Intel from cold calling each other's employees, that agreement would merely have resulted in reallocations of cold calls. Intel could cold call the employees of the other Defendant firms, and any non-Defendant firm as well as the other Defendant firms could cold call Intel's employees.

24. *Second, the Google-Intel Agreement had a legitimate pro-competitive justification given their on-going collaborations.* The primary benefit of collaborations is that firms can innovate and produce better products (or services) more efficiently than they would absent collaboration. Consumers benefit from better products and employees benefit from their firms' increased success. Along with the costs of collaborations and the uncertainties of whether they will succeed, collaborations often involve the potential loss of human capital and intellectual property, e.g., as a result of loss of employees to the other firm. This risk may cause firms to underinvest in collaboration. The Google-Intel Agreement reduced the anticipated risk to Intel of Google poaching its best employees and vice-versa. This gave Intel better incentives to invest in collaboration with Google, resulting in benefits to both consumers and employees.

25. *Third, the Google-Intel Agreement was not unnecessarily broad when considered in the context of their collaborations.* Agreements designed to reduce collaboration risks associated with the loss of key employees and intellectual property must be broad enough to cover the

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Docket No. 11-CV-2509-LHK, March 12, 2013 (henceforth, "Intel Interrogatory Response, March 12, 2013"), pp. 13-15. I also understand that Plaintiffs do not challenge either agreement or claim that either was part of the alleged conspiracy. Plaintiffs' Supplemental Answers and Objections to Defendants' Second Set of Interrogatories, *In Re: High-Tech Employees Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, May 24, 2013; Plaintiffs' Answers and Objections to Defendants' Second Set of Interrogatories, Number 16, *In Re: High-Tech Employees Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, June 7, 2013.

employees who might be involved in the collaborative efforts. Google and Intel were involved in multiple overlapping and continually changing collaborative projects during the relevant period. These projects involved large numbers of employees at various times. Given the dynamic nature of the high technology environment, firms such as Google and Intel could not *ex ante* determine which employees were going to be involved in either new or ongoing collaborative efforts; it would have been unduly burdensome to maintain narrower but continuously changing do-not-call lists; and it would have been potentially costly to have such lists if they increased the possibility of improperly placed cold calls. The transaction costs of maintaining employee-specific do-not-cold-call lists and avoiding mistakes would have been high, and collaboration may have been reduced.

26. With the benefit of perfect hindsight, the Google-Intel Agreement might appear broader than would have been necessary if one had known in advance and been able perfectly to correlate particular time periods, particular collaborations, and the particular employees involved in each collaboration. Such backward-looking analysis is, in any case, fallacious. At any point in time, the firms involved in multiple and changing high-stakes collaborations face significant uncertainties and are not in a position to correlate the scope of actual collaborations, their timing, and the employees who represent the potential loss of important information and specific functional skills.

27. *Fourth, Plaintiffs' claim that Intel was part of an overarching conspiracy to suppress compensation cannot be supported by economic analysis.* If Defendants intended to suppress compensation, it would make no sense to create a conspiracy that had no mechanism to restrict cold calling generally, reduce overall hiring efforts, reduce actual hiring, or reduce

overall employment. In addition, such restrictions would have to be adopted by a broader group of employers to accomplish the alleged conspiracy's goal.

28. Put in basic economic terms, a group of employers can suppress compensation only if it has market power and exercises that power. The NCC agreements covered an extremely small percentage of the class members' potential employers. The agreements did not even restrict cold calling between most pairs of Defendants. Plaintiffs' claim that Intel was part of an overarching conspiracy to suppress compensation does not make sense from an economic perspective.

29. By contrast, the Google-Intel Agreement was in Intel's individual self-interest independent of the alleged overarching conspiracy and the other five NCC agreements. The Agreement supported Google and Intel's collaborations whether or not the other Defendants were cold calling each other's employees. There is therefore no basis for inferring that Intel must have been party to some larger conspiracy. Either independent of or in combination with the Google-Intel Agreement, the other five NCC agreements were not in Intel's individual self-interest, especially if one accepts Plaintiffs' theory of harm. As noted above, the other five NCC agreements each could, on Plaintiffs' theory, have caused Intel's employees to receive more cold calls by diverting calls from, for example, Apple or Adobe. Under Plaintiffs' theory of harm, to which I do not subscribe whatsoever, those additional cold calls would have put upward pressure on Intel employee compensation. Thus, if Intel's intention had been to suppress its employees' compensation, joining the alleged overarching conspiracy would be directly contrary to its interests and therefore make no sense.

30. I understand that Intel's CEO, Paul Otellini, served on Google's board from 2004 and Plaintiffs claim he may have been aware of Google's other agreements. These facts or assertions from an economic and factual perspective do not indicate that Intel participated in an overarching conspiracy. The Google-Intel Agreement was in Intel's independent self-interest without regard to Google's other agreements, and the other agreements were not in Intel's self-interest.

V. THE SIX AGREEMENTS COULD NOT HAVE HAD MEANINGFUL ANTICOMPETITIVE EFFECTS ON CLASS MEMBERS' COMPENSATION

31. There are at least three broad reasons why the Six Agreements could not have had meaningful anticompetitive effects on class members' compensation. First, as emphasized, the NCC agreements did not reduce employment or hiring. Second, the NCC agreements would not have meaningfully affected class members' access to information about employment opportunities. Third, any effects on individual class members would not have resulted in widespread and systematic effects.

A. The NCC agreements did not reduce employment or hiring

32. The neutrality of the NCC agreements with respect to employment and hiring implies that the agreements could have resulted in some individuals missing out on more attractive employment opportunities and others benefiting from opportunities that otherwise would not have been available. The result would be a mix of effects on individuals and a mix of effects in the market. This mix of effects is very different from an overall and meaningful anticompetitive effect on the market.

33. To illustrate the point, suppose that Google has job openings for software engineers and would consider Intel employees to fill the positions. With the NCC agreement, Intel employees may miss the opportunity to be recruited by Google in the unlikely event they have no other way to learn of the opportunity. Google may fill the positions with other software engineers from, for example, Adobe or a non-Defendant such as Microsoft, HP, or Yahoo. Those Adobe, Microsoft or other non-Defendant employees would not have had the opportunity if Intel employees had filled Google's open positions. Thus, employees recruited from Adobe, Microsoft, or another non-Defendant could receive a more preferred combination of compensation and job attributes than they otherwise would have. As a result, the NCC agreement between Google and Intel that allegedly harms employees at Intel would simultaneously benefit employees Google hires from Adobe, Microsoft, or another non-Defendant. The information effects in the labor market would be similarly countervailing because cold calls are shifted from Intel employees to Adobe, Microsoft or other non-Defendant employees.

B. The NCC agreements could not have meaningfully affected class members' access to information about outside employment opportunities

1. Cold calling is one of many ways that technology employees learn about outside employment opportunities

34. Bilateral restrictions on cold calling do not meaningfully affect workers' access to information about outside employment opportunities because workers learn about such opportunities in other ways.

35. A *Society for Human Resource Management* study found that, in addition to cold calling, workers learn about employment opportunities from employee referrals, internal job

postings, online job boards, print advertising, on-campus university recruiting, hiring agencies, informal networking, temporary agencies, trade publications, and research/sourcing firms, among others.[11] Named Plaintiffs Mark Fichtner (who worked for Intel) and Michael Devine testified that they maintained wide networks and sources of information about employment opportunities and compensation.[12]

36. Defendants also routinely recruited employees through job posts, employee referrals, and direct solicitation of employees at other Defendant and non-Defendant firms.[13] [redacted]

[redacted]

[11] "Online Technologies and Their Impact on Recruitment Strategies: Using Social Networking Websites to Attract Talent," Society for Human Resource Management, July 2008, Figure 1, http://www.shrm.org/research/surveyfindings/documents/SNS%20staffing%20%20research%20PresentationFinal.pdf. Similarly, according to another survey conducted by the Chartered Institute of Personnel and Development for the time period of January to December 2006, local newspaper advertisements and company's corporate websites were the leading methods of recruitment for talent. "Recruitment, Retention and Turnover," Chartered Institute of Personnel Development, June 2007.

[12] Plaintiff Fichtner testified that he used co-workers, professional contacts, and Internet sources such as Monster.com to get information about jobs and compensation. Deposition of Mark Fichtner, *In Re: High-Tech Employee Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, October 15, 2012, pp. 45-46. Plaintiff Devine testified that he used multiple sources of information to get information about jobs and compensation, including phone calls, co-workers, professional contacts, Internet sources such as Monster.com, Ice.com, Hotjobs.com, the Washington State unemployment job site, direct employer websites (Boeing, University of Washington, Microsoft, Amazon), an email forum called Seattle Startups, Salary.com, Ceiling.com and others. Deposition of Michael Devine, *In Re: High-Tech Employee Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, October 24, 2012, pp. 130-135, pp. 143-145.

[13] See, e.g., Declaration of Tina Evangelista in Support of Opposition to Class Certification, *In Re: High-Tech Employee Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, November 12, 2012 (henceforth, "Declaration of Tina Evangelista, November 12, 2012"), pp. 2-3; 40006DOC000773 to 990 at 784; GOOG-HIGH-TECH-00024150 to 203 at 186; GOOG-HIGH-TECH-00061052 to 053 at 052.

[14] GOOG-HIGH-TECH-00024150 to 203 at 159.

[redacted][17]

2. The NCC agreements covered only a small subset of workers' potential employers

37. Bilateral restrictions on cold calling would not meaningfully affect workers' access to information about outside employment opportunities if the restrictions cover only a small subset of workers' potential employers.

38. Exhibit 1 shows that each Defendant competed in industries with hundreds of other firms.[18] Defendants thus competed with many non-Defendants for employees. The NCC agreements did nothing to restrict the flow of information about outside employment opportunities from these many other companies. Exhibit 2 shows that Defendants represented a very small percentage of class members' potential employment opportunities in high technology jobs. I

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15 [redacted] Declaration of Jeff Vijungco of Adobe Systems Inc. in Support of Defendants' Opposition to Plaintiffs' Motion for Class Certification, *In Re: High-Tech Employee Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, November 9, 2012, p. 2.

16 Declaration of Tina Evangelista, November 12, 2012, pp. 1-2; "Most of our hiring is college hiring, recent grads and graduate students," Deposition of Paul Otellini and Related Exhibits, *In Re: High-Tech Employee Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, January 29, 2013 (henceforth, "Deposition of Paul Otellini, January 29, 2013"), p. 156.

17 Declaration of Tina Evangelista, November 12, 2012, p. 2.

18 Exhibit 1a shows the number of firms in Defendants' primary industries in the U.S. and Exhibit 1b shows the number of firms in Defendants' primary industries in California.

estimate there were more than 2 million workers employed in high technology occupations during the alleged conduct period.[19] I estimate that Intel represented about 1.2 to 1.5 percent of U.S.-based high technology employees between 2005 and 2009 and that Google represented about 0.1 to 0.3 percent. Together, Defendants represented approximately 2 percent of all high technology jobs. I also estimate that Intel represented about 2.3 to 3.0 percent of California-based high technology employees between 2005 and 2009 and that Google represented about 0.6 to 1.5 percent. Together, Defendants represented less than 7 percent or less of all high technology jobs in California.

39. Exhibit 3a shows by year the flows of employees between Intel and Google, between Intel and other Defendants, and between Intel and non-Defendants. Three patterns stand out:

i. Intel hired large numbers of employees—over [redacted] technical employees (as Plaintiffs' class defines them) each year during the alleged conduct period—and a large number of employees left Intel each year.

ii. [redacted] Moreover, these flows were similar before, during, and after the alleged conduct period. Intel hired only [redacted] technical employees from Google during the decade from 2002 through 2011 (out of more than 20,000 total hires). Google hired [redacted] technical employees from Intel during this period (out of [redacted] total technical employee hires).[20]

Note: These consistently small flows directly contradict the hypothesis advanced by Plaintiffs' experts that, if not for the NCC agreements, there would have been "bursts" of cold calls between Google and Intel.[21]

iii. Similarly, even though Intel had no challenged agreements with other Defendants, few technical employees moved between Intel and other Defendants each year. Intel hired only [redacted] technical employees from other Defendants between 2002 and 2011.

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[19] Exhibit 2a shows Defendants' percentage of U.S.-based high technology employees. Exhibit 2b shows Defendants' percentage of California-based high technology employees.

[20] The total number of Google technical employee hires is calculated in the backup materials to this report.

[21] Leamer Rebuttal Report, July 12, 2013, p. 1.

> Defendants other than Google hired only [redacted] technical employees (out of [redacted] total technical employee hires) from Intel during this period.[22]

40. Exhibit 3b reports data on hires and departures of technical employees for all Defendants combined. The flows are shown to and from pairs of Defendants with at-issue agreements, pairs of Defendants without at-issue agreements, and between Defendants and non-Defendants. Similar patterns are observed. Collectively Defendants hired large numbers of technical employees each year and had large numbers of employees leave. Only a very small share of these worker flows was between either Defendants with an at-issue agreement or Defendants without an at-issue agreement.

41. The large numbers of individuals coming to and going from Defendants would have resulted in large amounts of information being available to Defendants' employees about outside employment opportunities. The individuals who came to Intel from, for example, Microsoft would have brought information that they learned, in part, from cold calls that Google made to Microsoft employees. Similarly, the individuals who came to Google from Microsoft would have brought information that they learned, in part, from cold calls that Intel made to Microsoft employees.

42. Given the finding above concerning the consistently low patterns of hiring between Google and Intel before, during, and after the period in question, the number of Intel employees who may have missed out on a cold call from Google and the number of Google employees who may have missed out on a cold from Intel is small. Likewise, the Google-Intel Agreement

[22] The total number of technical employee hires by Defendants other than Google and Intel is calculated in the backup materials to this report.

likely did not reduce the overall volume of cold calling to Google's and Intel's employees. During all the relevant period, it should be emphasized that:

- Intel's closest labor market competitors (AMD, IBM, HP, Texas Instruments, Qualcomm, Microsoft, Nvidia, Micron, and Cisco) all remained free to cold call Intel's employees.[23]
- Plaintiffs do not allege that any other Defendant (i.e., Apple, Adobe, Pixar, Lucasfilm, or Intuit) agreed not to cold call Intel as part of the alleged conspiracy.

43. Exhibit 3b indicates that in each year before, during and after the relevant period, more than 98 percent of new technical employee hires by Defendants were from non-Defendants.[24] Of the fewer than two percent of new technical employee hires from other Defendants, the number of technical employees who moved between pairs of Defendants with an at-issue agreement was about the same as the number of technical employees who moved between pairs of Defendants without an at-issue agreement. Exhibit 4 shows the top previous employers of Intel technical employees for whom the previous employer is known. None of the other Defendants are among [redacted]

3. The NCC agreements did not restrict total cold calls by Defendants

44. The NCC agreements restricted where a given Defendant could cold call, but did not restrict how much that Defendant could cold call. Therefore, the Google-Intel Agreement could have resulted in both Google and Intel cold calling the other Defendants' employees more, and, similarly, the Adobe-Apple agreement could have resulted in both Adobe and Apple cold calling Intel's employees more. This has an important implication. Employees at Intel

[23] See Exhibit 4.

[24] See backup to Exhibit 3 for calculations.

missing out on cold calls from Google may have instead received cold calls from a different defendant, such as Adobe, that they would not have received but for Adobe's agreement not to cold call Apple's employees.

45. Furthermore, to the extent that a NCC agreement meaningfully restricts the pool of potential candidates from which Google can recruit (which it likely does not, given the many other potential avenues for recruiting Intel employees and the many other companies from which Google may recruit), the compensation Google must offer its own employees and/or the individuals it recruits from, for example, Adobe, Microsoft or Yahoo, could be higher than the compensation that Google would have needed to offer but for the Google-Intel Agreement.

46. Plaintiffs' experts theorize that a suppression of individual cold calls can result in company-wide compensation suppression.[25] It follows from Plaintiffs' theory, however, that an increase in individual cold calls can result in company-wide compensation increases. Plaintiffs assert that employees at Intel missing out on cold calls from Google resulted in company-wide effects, but incorrectly ignore that, if that were correct, employees at Intel receiving more cold calls from Adobe would also have resulted in company-wide effects. Again, a logical result of Plaintiffs' theory is that any company-wide effects that resulted from the NCC agreements would have had countervailing effects on compensation levels.

[25] "One foundation of employee loyalty is a feeling of fairness that can translate into a sharing of the rewards with more equality than a market might otherwise produce. 'Equitable' compensation practices spread wage increases or reductions across broad categories of workers. This implies that when outside opportunities put pressure at one point in the wage structure calling for higher wages for a few, firms tend to maintain the overall firm wage structure, rewarding everyone for the improved outside opportunities of some workers." Expert Report of Edward E. Leamer, Ph.D., *In Re: High-Tech Employees Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, No. 11-CV-2509-LHK, October 1, 2012, ¶ 104.

47. Plaintiffs' expert Dr. Hallock states that:

> In the instance of this case, the Defendant firms limited the market for the employees by restricting cold calling. This clearly led to what would otherwise be higher levels of compensation for some of those in the firms, except that the restrictions were in place. This situation of lower levels of compensation for some can directly lead to lower levels of others due to the very nature of the formalized pay systems in place at the Defendants.[26]

Dr. Hallock's argument is incomplete in a critical respect. Dr. Hallock focuses exclusively on the class members at employer A who did not receive a cold call from employer B because of a bilateral NCC agreement between employers A and B. But Dr. Hallock ignores entirely the class members who filled the positions at employer A in place of the class members at employer B, and therefore benefited based on Plaintiffs' theory, as well as the class members at employers A and B who received cold calls from, say, employer C because of a bilateral NCC agreement between employers C and D. For example, he completely ignores that Google and Intel employees may receive more cold calls as a result of the NCC agreement between Adobe and Apple. Dr. Manning and Dr. Leamer make the same fundamental mistake of ignoring the implications that follow directly from the point that the Six Agreements were not restrictions on hiring, employment or overall recruiting.[27]

48. Plaintiffs' expert Dr. Manning observes that "workers who typically care greatly about individual job opportunities … are therefore likely to be harmed by a conspiracy that limited

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[26] Hallock Report, October 27, 2013, ¶¶ 182-183.

[27] "Q: But it might be the case that if they had been prohibited from calling Google employees and they wanted to hire software engineers, for example, they would have called somebody else's employees instead; correct? A: That could be… Q: But the possibility that these agreements would actually increase the number of cold-calls placed to a particular company might explain a possible… it might show overcompensation at a particular defendant; correct ? A: That's true. That's true." Deposition of Edward E. Leamer, *In Re: High-Tech Employee Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, November 18, 2013, p. 1087.

information and job opportunities...."[28] Dr. Manning's observation misses the point. Class members who cared about individual job opportunities are unlikely to be harmed by agreements that do not meaningfully affect their information about job opportunities. The alleged NCC agreements would not be expected to meaningfully affect class members' information about job opportunities. It is therefore unlikely that many were harmed. To the extent some individuals might have been harmed, other individuals might have benefited. Even if that happened, however, rather than supporting Plaintiffs' economic theory—which is that somehow all class members were harmed—it directly rebuts it.

49. Dr. Manning also asserts that:

> It has become increasingly recognized by many academic labor economists that labor markets in reality are far from perfectly competitive and that one cannot properly understand the workings of labor markets without recognizing the imperfections caused by the following: 1) workers are not fully informed about all alternatives available to them; 2) it is costly for workers to move between employers; and 3) there are important individual characteristics in employers such that workers do not have a large choice of essentially identical positions.[29]

Whether or not "labor markets in reality are far from perfectly competitive" is not relevant. The basic point here is that, regardless of what one assumes about labor markets, the alleged NCC agreements did not meaningfully affect class members' information about job opportunities.

50. Dr. Manning also draws a distinction between "mobility" and "movement" arguing that "it is not actual movement that is important here, but rather the potential to move … If one has a

[28] Manning Report, October 28, 2013, ¶ 45.

[29] Manning Report, October 28, 2013, ¶ 27.

credible threat to move this is a useful tool in obtaining higher compensation."[30] Again, Dr. Manning's observation is not relevant—the alleged NCC agreements did not meaningfully affect class members' information about job opportunities, and so, even under Plaintiffs' theory, did not meaningfully suppress class members' "potential to move."

51. Dr. Marx asserts that "[the] network of Anti-Solicitation agreements enables the Defendants to (illegally) lower their labor costs as compared to non-Defendant competitors."[31] Dr. Marx is wrong. To begin with, the so-called "Anti-Solicitation" agreements were not capable of reducing overall labor costs (employee compensation) because they did not restrict employment or hiring. Moreover, non-Defendants (and, for the most part, Defendants) were not limited in any way from soliciting or hiring employees of Defendant companies. If Dr. Marx's assertion (as well as the claims made by other Plaintiffs' experts) that Defendants suppressed compensation were correct, then there should have been an outflow of employees from Defendants to non-Defendants. But Exhibit 2 shows that Defendants' percentage of high technology employment was stable over the alleged conduct period. And both Google and Apple grew substantially, directly belying the notion that they were paying compensation below that being paid by their competitors.

52. Dr. Marx also explains that non-compete agreements between employers and individual employees restrict those employees' outside opportunities and asserts, by analogy, that the

[30] Manning Report, October 28, 2013, ¶ 51.

[31] Marx Report, October 28, 2013, ¶ 11.

NCC agreements at issue have the same effects.[32] Dr. Marx is wrong. Non-compete agreements and NCC agreements are fundamentally different. According to Dr. Marx, non-compete agreements typically prohibit an employee when she leaves a firm from working for another firm in the same field of service.[33] In other words, the employee may not take a job that involves use of her prior job experience and her most valuable skills. Such agreements may reduce individual employees' compensation because they are forced to take jobs, for at least a period of time, that do not capitalize on that experience or those skills. NCC agreements do not in any way restrict the type of job that an employee may take when she leaves her current employer. Such agreements potentially affect only the extent to which employees are provided with unsolicited information about outside employment opportunities.

C. Any effects on the compensation of individual class members would not have resulted in widespread effects

53. Some information about outside employment opportunities is relevant to a broad group of employees ("broadly relevant information"); other information is relevant to specific individuals ("employee-specific information"). Broadly relevant information about outside employment opportunities could in some circumstances have effects beyond an individual employee. But suppression of cold calls that would have conveyed broadly relevant

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[32] "As Anti-Solicitation agreements limit the flow of job opportunities to workers, as do employee non-compete agreements, Anti-Solicitation agreements would indeed limit compensation in the way that Defendants' chief executives hoped they would." Marx Report, October 28, 2013, ¶ 6d.

[33] "A non-compete is a written agreement signed by an individual worker and a representative of an organization, with at least two stipulations regarding the types of employment the worker may not accept after separating from the current organization. i. First, the non-compete designates a *field of service* in which the ex-employee will refrain from taking a job…ii. Second, the non-compete designates a *time period* following separation from the employer during which the ex-employee will refrain from taking a job in the designated field of service." Marx Report, October 28, 2013, ¶ 21a.

information would not have mattered because the information would have been widely available through other channels. And while a suppressed cold call from a single employer that would have conveyed employee-specific information could have mattered to the individual, any effects would not extend beyond the individual and, potentially, other employees with the same skills and knowledge. For example, a cold call made to a specific worker that provides her information about the compensation she could earn at another firm because of her individual talents would not provide much, if any, useful information about the compensation differently situated employees could earn.

54. Plaintiffs' experts assert that suppressed cold calls had widespread effects because of widespread information transmission. For example, Dr. Manning states:

> The agreements not to cold call each other's employees generally reduced job opportunities and the information available about labor market conditions, which information is of value to workers in order to decide whether their current job and remuneration is appropriate, thereby generally suppressing wages to the benefit of Defendants and to the detriment of members of the Class.[34]

55. Plaintiffs' theory is that suppressed cold calls from a single employer would have provided information to employees receiving the cold calls, and that information would have been transmitted to the employees not receiving the cold calls. The argument misses a broader point. Plaintiffs' theory is, fundamentally, about information that is relevant to broad groups of employees, e.g., market compensation of software engineers with zero years of experience. Because of widespread information transmission, however, suppressed cold calls that would have been relevant to broad groups of employees would not have provided new

[34] Manning Report, October 28, 2013, ¶8.b.ii.

information. Plaintiffs focus on the transmission of information relevant to broad groups of employees, but they ignore that such information would have been widely available through other means, including cold calls from other employers.[35]

VI. THE GOOGLE-INTEL AGREEMENT FOSTERED COLLABORATIONS BETWEEN GOOGLE AND INTEL AND THEREBY BENEFITED CONSUMERS AND EMPLOYEES

56. In this section, I explain that the Google-Intel Agreement gave Intel better incentives to invest in collaborations with Google that were beneficial to consumers and employees. I also explain that the Google-Intel Agreement was not overly broad in the context of their collaborations.

A. The Google-Intel Agreement strengthened Intel's incentives to collaborate

1. Inter-firm collaboration is important in the high technology industry

57. Collaboration between firms is prevalent in the high technology industry and is an important strategy for competing with other high technology firms in the face of rapid technological change.[36] Collaboration allows firms with complementary resources to leverage each other's

[35] The compensation offered by one employer is not likely to be different from the compensation offered by other employers, all else equal, unless the individual employee has skills or knowledge that are uniquely valuable to the employer. In that case, however, the information conveyed in the compensation offer would be of little value to other employees.

[36] See, for example, Gnyawali, D. R., and Park, B. J., "Co-opetition Between Giants: Collaboration with Competitors for Technological Innovation Research Policy," *Research Policy*, Vol. 40, No. 5, 2011, 650-663, p. 652.The authors also note that these motivating factors for collaboration in the high technology industry are even greater for "giants" (i.e., large companies that are industry leaders).

strengths and increase the speed of innovation while also sharing the associated costs and risks.[37] Cisco, the leader in networking equipment, explains the need for collaboration:

> Companies are increasingly dependent on partnering within the industry ecosystem to develop and introduce new products because of the increasing complexity of new products (software, embedded systems, digital content, and specialized components), fast time-to-market requirements, the need for flexibility to make changes rapidly along the product development cycle, and regulatory requirements that vary by country. The ability to collaborate effectively—both internally among functions and geographic locations, and externally with ecosystem partners—is high on executives' list of priorities.[38]

The views expressed by Cisco are widely shared. For example, a global study of CEOs found that collaboration is considered to be "crucial to their business."[39] Firms that work together can innovate and produce better products more efficiently than they would absent collaboration. Consumers benefit from better products and employees benefit from their firms' increased success. Greater success in product markets leads to increased demand for workers, resulting in more jobs at higher pay.

58. Collaborations involve costs, may result in failures, and also entail risks. One risk is the loss of human capital and intellectual property that stems from collaborators' poaching of each

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[37] Bengtsson, M., and Kock, S., "'Coopetition' in Business Networks - To Cooperate and Compete Simultaneously," *Industrial Marketing Management*, Vol. 29, No. 5, 2000, 411-426, p. 421.

[38] "High-Tech Industry: The Road to Profitability Through Global Integration and Collaboration," Cisco, July 2009, p. 5.

[39] "Defining Common Collaboration Tensions," *Harvard Business Review Blog Network*, May 6, 2009, http://blogs.hbr.org/2009/05/defining-common-collaboration/.

other's employees. Collaborators are better able to identify the most valuable employees at the other firm in the course of collaborating and may attempt to hire them away.[40]

59. There are many prominent examples of losses from "poaching" by a collaborator. Microsoft recruited 34 development employees from Borland in 1997. Siebel recruited 27 SAP employees, including high-level executives, in 1999.[41]

60. Of note, Intel and Pixar encountered these issues during their collaborative project "RenderMan," a program for 3D animation.[42] Intel and Pixar worked closely together to optimize the performance of RenderMan on Intel's architecture, which required the development of new technologies critical to Pixar's success.[43] Tensions arose, however, after a few Pixar engineers moved to Intel, which was also collaborating with Pixar's competitor Dreamworks. Intel email communications describe Greg Brandeau of Pixar as being "completely bent out of shape" and "incandescent" over the possibility of "their IP being used for the benefit of [Pixar's] competition."[44] When Intel subsequently attempted to

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40 "Collaboration can be fraught with other risks. Parties may bring hidden agendas to the venture. There is an ever-present threat that one party will capture the lion's share of the benefits, or defect with the other party's knowledge and expertise." Powell, Walter W, "Neither Market Nor Hierarchy: Network Forms of Organization," *Research in Organizational Behavior*, Vol. 12, 1990, p. 318. In a PricewaterhouseCoopers survey of executives, 21 percent report "human resources and talent" was the "most critical" risk to manage within formal collaborations. "Managing the Risk and Rewards of Collaboration," PricewaterhouseCoopers, 2008, p. 8.

41 Kim, Jin-Hyuk, "Employee Poaching: Why It Can Be Predatory," *Managerial and Decision Economics*, John Wiley & Sons, 2013.

42 Intel Interrogatory Response, March 12, 2013, p. 15.

43 Intel Interrogatory Response, March 12, 2013, p. 16.

44 Email from Jim Hurley to Justin Rattner and Joseph Shutz, October 22, 2008, 76600DOC000157.

collaborate with Pixar on other technologies, Pixar rebuffed such attempts because Brandeau was "VERY leery of giving [Intel] anything that could end up helping a competitor."[45]

61. Similarly, Apple expressed its frustration with Intel in 2008 after Intel "tried to recruit key Apple graphics folks" that had been actively "working with Intel on future graphics architectures." An Apple email communication indicates that Apple blamed this targeting of its talent on the collaboration between Apple and Intel. Apple's Greg Clausen goes on to describe how Intel's targeting of Apple's employees "is causing significant ill will and threatens present working engagements."[46]

62. Given the benefits and costs to collaboration, decisions whether to collaborate are influenced by a wide range of factors, including the risks discussed above. As the risk associated with collaboration increases, firms will lower their level of collaboration, all else equal. Consequently, firms look for ways to reduce the risks of collaboration, for example, by entering into agreements not to cold call each other's employees. In this way, no-cold-calling agreements can facilitate procompetitive collaborations that—absent those agreements—might not occur at all or would be conducted less efficiently, and so would generate fewer benefits for consumers and employees.

63. Finally, the Plaintiffs' expert Dr. Marx appears to believe that no-cold-calling agreements must be "essential" to be procompetitive.[47,48] No-cold-calling agreements do not need to be

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[45] Email from Jim Hurley to Ranna Prajapati, March 17, 2009, 76600DOC000157.

[46] Email from Greg Clausen to Jeff Tripaldi and Mike J. Wagner, April 21, 2008, 76606DOC000425.

[47] Marx Report, October 28, 2013, ¶ 25.

[48] Dr. Manning implies that the fact that "the agreements were regarded as important by senior executives of the Defendants" confirms an intent to form a conspiracy. Manning Report, October 28, 2013, ¶ 54. However, this

"essential" to be procompetitive. No-cold-calling agreements can be procompetitive if they facilitate collaboration, even if they are not essential for it to occur at all. Firms determine how and how much to invest in collaboration by weighing the risks and the benefits. No-cold-calling agreements can be procompetitive if they increase the benefits of collaboration by reducing the associated risks.[49]

64. In this same regard, Dr. Marx observes that Intel engaged in collaborations that did not have NCC agreements.[50] This is not relevant. That Intel was willing to collaborate with one firm in the absence of an NCC agreement does not imply in any way that Intel's NCC agreement with Google did not facilitate its collaborations with Google.

2. Google and Intel collaborated extensively

65. Google and Intel engaged in extensive collaboration over at least the period 2003 through 2013. The long-term and wide-ranging nature of collaboration between Google and Intel resulted in an array of new and innovative products and initiatives that benefited from the unique expertise of employees within each firm.[51] And, because Google and Intel produce complementary products, they each benefited from helping the other innovate.

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evidence could equally support the argument that the agreements were considered important to the success of Google and Intel's collaborations.

[49] A simple example illustrates this point. Suppose that firms A and B are starting a collaboration. Both firms must decide how to staff the collaboration. If firm A is concerned that firm B might poach its best employees, firm A might be less willing to staff its best employees on the collaboration. Firm A must weigh the costs and the benefits. The benefits are that staffing its best employees on the collaboration would make the collaboration more productive. The costs are that its best employees might be poached by firm B. In some cases, absent a NCC agreement, firm A might not be willing to staff its best employees on the collaboration. In this case, therefore, a NCC agreement would be procompetitive. It would provide firm A better incentives to staff its best employees on the collaboration.

[50] Marx Report, October 28, 2013, ¶ 27.

[51] Mr. Otellini, for example, explained: "[T]he collaboration, we had one in the data center, we had one in data center efficiency, we had one in search optimization, we had one around Google TV, we had one around

66. Exhibit 5 summarizes selected collaborations between Intel and Google, including the following:

- Intel's engineers were helping to design motherboards for Google data centers as early as 2003.[52] This collaboration led to the design of more energy-efficient computers and components for these data centers in 2005 and eventually evolved into the Climate Savers Computing Initiative to reduce greenhouse gas emissions by creating more energy-efficient computers and servers in 2007.[53]

- Google and Intel have collaborated on optimizing processors developed by Intel specifically for operating systems developed by Google.[54] In 2007, Intel and Google, along with other technology and mobile-industry companies, formally introduced the Android operating system along with the "Open Handset Alliance," a consortium of firms dedicated to the development of open standards for mobile devices.[55] While the operating system was not initially optimized for Intel processors, the two companies have worked together to develop smaller, more efficient processors and "optimize[d] the Android platform for Intel architecture."[56] Today, the open-source operating system has claimed about 80 percent of the global market for smartphones.[57]

Android, one around Chrome, Chrome OS. All of those -- all of those happened. It's speculative to say I don't know that anything would not have happened in the absence of the agreement. [] But, you know, the companies were working well together and were engaged broadly in a wide array of projects as I delineated." Deposition of Paul Otellini, January 29, 2013, p. 8. "By September 2008, the scope of Intel's and Google's collaborative relationship had grown so large that Intel established a 'Google Program Office' to help manage the wide and continuing array of projects the companies have pursued together." Intel Interrogatory Response, March 12, 2013, p. 7.

52 Deposition of Paul Otellini, January 29, 2013, pp. 83-84; Deposition of Renee James, *In Re: High-Tech Employee Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, March 22, 2013 (henceforth, "Deposition of Renee James, March 22, 2013), pp. 154-55, 234-35; Intel Interrogatory Response, March 12, 2013, p. 7.

53 "Intel and Google Join with Dell, EDS, EPA, HP, IBM, LENOVO, Microsoft, WWF and Others to Launch Climate Savers Computing Initiative," World Wildlife Fund Press Release, June 12, 2007, http://worldwildlife.org/press-releases/intel-and-google-join-with-dell-eds-epa-hp-ibm-lenovo-microsoft-wwf-and-others-to-launch-climate-savers-computing-initiative.

54 Deposition of Paul Otellini, January 29, 2013, pp. 83, 86; Deposition of Renee James, March 22, 2013, pp. 154-55, 232; 76602DOC003854 to 855 at 854; Intel Interrogatory Response, March 12, 2013, p. 9.

55 "Industry Leaders Announce Open Platform for Mobile Devices," Open Handset Alliance, November 5, 2007, http://www.openhandsetalliance.com/press_110507.html.

56 "Google, Intel Announce Partnership for Android Phones," *Huffington Post*, November 13, 2011, http://www.huffingtonpost.com/2011/09/13/google-intel-partnership-android_n_960487.html; "Intel and Google to Optimize Android Platform for Intel," Intel, September 13, 2011,

- Intel also collaborated with Google, since at least 2008, in developing the Google Chrome operating system.[58] In 2009, Google and Intel publicly announced their ongoing partnership in developing the Google Chrome operating system for "Chromebooks," a series of low-cost notebook computers which run on Google's web-based Chrome operating system, sold by electronics manufacturers such as Hewlett Packard and Samsung.[59]

3. Intel raised concerns about the loss of key personnel through collaboration with Google

67. The record in this case indicates that Intel was concerned about losing valuable employees to Google in the context of collaborative efforts between Google and Intel. Otellini first asked Schmidt to put a stop to the poaching of Intel employees involved in collaborations with Google in the spring of 2006 after "a couple" of Intel software engineers working on site at Google were poached.[60] Otellini subsequently emailed Schmidt in May 2006 after two "very senior software employees" who had worked on the Google software optimization collaboration were targeted by Google recruiters.[61]

68. In September 2007 Otellini reached out to Schmidt with concerns about a group of Intel employees. Intel had "set up a large… software design team in Moscow that was doing a lot

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http://newsroom.intel.com/community/intel_newsroom/blog/2011/09/13/intel-and-google-to-optimize-android-platform-for-intel-architecture.

57 Etherington, Darrell, "Android Nears 80% Market Share In Global Smartphone Shipments, as iOS and Blackberry Share Slides, per IDC," *TechCrunch*, August 7, 2013, http://techcrunch.com/2013/08/07/android-nears-80-market-share-in-global-smartphone-shipments-as-ios-and-blackberry-share-slides-per-idc/.

58 Deposition of Renee James, March 22, 2013, pp. 154-55; Deposition of Paul Otellini, January 29, 2013, pp. 83, 86-87; 76602DOC003854 to 855 at 854; Intel Interrogatory Response, March 12, 2013, pp. 8-9.

59 Meyers, David, "Intel to Help with Chrome for Netbooks," *ZDNet*, September 16, 2009, http://www.zdnet.com/news/intel-to-help-with-chrome-for-netbooks/343152; Shead, Sam, "Cheat Sheet: Chromebooks," *TechRepublic*, May 29, 2013, http://www.techrepublic.com/blog/european-technology/cheat-sheet-chromebooks/.

60 Deposition of Paul Otellini, January 29, 2013, pp. 75, 84, 128.

61 Exhibit 451 to the Deposition of Paul Otellini, January 29, 2013; Deposition of Paul Otellini, January 29, 2013, pp. 112-116.

of the work that was… focused on Google. At Google's request, [Intel] showed them how to set up a software center in Moscow."[62] Renee James [Intel's lead software executive] describes the substantial loss of employees related to this project: "I am losing so many people to Google… The turn over in Moscow is almost 20% ... and, the belief is the damage is done in Russia – meaning they have what they want already."[63] Otellini forwarded this email to Schmidt, asking "Eric, can you please help here???"[64]

69. Similarly, Intel gave a presentation to Google on its site-selection methods in 2007. A Google VP was impressed by the presentation and subsequently poached the team leader from Intel. Otellini again reached out to Schmidt to express his dissatisfaction with the episode: "[s]eems unkind to hire our guy after we helped you out by teaching you how we did site selection…my team is pretty teed off."[65]

70. The Google-Intel Agreement, as I have assumed it, prohibited cold calling of Google and Intel employees, and so partially protected both parties from additional poaching beyond that described in the above exchanges.[66] In both instances, the correspondence between Intel and Google indicates that Google, as a result of technical collaborations and other mutually beneficial cooperation between the companies (such as Intel's offer to assist Google with site selection as Google planned its international expansion), had specific knowledge regarding particular Intel employees to target when recruiting from Intel. The correspondence also

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62 Deposition of Paul Otellini, January 29, 2013, p. 185.

63 Exhibit 2345 to the Deposition of Renee James, March 22, 2013.

64 Exhibit 2345 to the Deposition of Renee James, March 22, 2013.

65 Exhibit 454 to the Deposition of Paul Otellini, January 29, 2013.

66 According to Otellini's deposition testimony, he found out that Intel was on Google's do-not-cold-call list in an email from Schmidt in June 2007. Deposition of Paul Otellini, January 29, 2013, p. 141.

indicates, however, that the Google-Intel Agreement was difficult to enforce and that Google continued to cold call targeted Intel employees during the alleged conduct period.[67]

B. The Google-Intel Agreement was not unnecessarily broad in the context of their collaborations

71. In the previous sections, I explain why the Google-Intel Agreement did not have meaningful anticompetitive effects. For that reason, the breadth of the Agreement is unlikely to be significant from an economic perspective. Regardless of the breadth of the agreement, its procompetitive benefits in fostering collaboration would outweigh its anticompetitive effects, if any.

72. The breadth of the Agreement makes sense in light of the record and the dynamic nature of the technology sector. Intel and Google engaged in multiple overlapping collaborations during the relevant period that involved significant numbers of employees.[68] It would have been difficult *ex ante* for Google and Intel to have identified precisely the individuals to be involved in these collaborations. For this reason, it makes sense that an agreement designed to mitigate the risk of poaching an unknown set of individuals was broad. Knowledge after the fact about which employees were actually involved in any given collaboration cannot be

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[67] I understand there is evidence that Google placed Intel on a unilateral do-not-cold-call list in March 2005. GOOG-HIGH-TECH-00008283 to 284 at 283. Dr. Marx describes Google's policy as follows: "While Google denies reaching any Anti-Solicitation agreement with any other company, it justifies what it asserts are only internal, unilateral policies not to solicit any employee of Apple, Intel, and Intuit because Google claims that it 'perceived that engaging in cold-calling of these companies' employees could jeopardize the important collaborative and business relationships between Google and those companies.'" Marx Report, October 28, 2013, ¶ 24.a. To the extent that Google as a result would not have cold called Intel's employees, an economic analysis of the effect of the Google-Intel Agreement would need to separate the effect of the Agreement from the effect of Google's unilateral decision not to cold call Intel's employees.

[68] For example, at least 1,000 Google employees and more than 1,000 Intel employees worked on Google Chrome related projects (See Exhibit 5). This means that in 2009, approximately 14 percent of Google's 7,199 technical employees, and 4 percent of Intel's 28,449 technical employees, were involved in collaboration with one another on Google Chrome related projects (see Exhibit 2).

the basis for an argument that only those employees should have been included in a NCC agreement.

73. It also would have been unduly burdensome to monitor and continually communicate the identities of involved individuals as collaborations evolved and changed over time. This is another reason why it makes sense that an agreement designed to mitigate the risk of poaching an unknown set of continuously changing individuals was broad. Again, knowledge after the fact about which employees were actually involved in any given collaboration cannot be the basis for an argument that only those employees should have been included in a NCC agreement.

74. It is also not the case that Intel and Google could have mitigated the risk of poaching by simply increasing the compensation of the employees involved in the collaborations, as I understand Plaintiffs' experts have claimed. This would not have solved the basic problem. While the risk of poaching might have been decreased, the cost of the collaborations would still have been elevated and Intel's incentive to invest in them diminished.

VII. THE PLAINTIFFS' CLAIM THAT INTEL WAS PART OF AN OVERARCHING CONSPIRACY TO SUPPRESS COMPENSATION DOES NOT MAKE SENSE FROM AN ECONOMIC PERSPECTIVE

75. Plaintiffs allege that the Six Agreements reflect an overarching conspiracy to suppress class members' compensation. They also allege that Intel was part of this overarching conspiracy. Plaintiffs' allegation of an overarching conspiracy and, more specifically, Intel's participation in that overarching conspiracy, does not make economic sense.

A. The NCC agreements were not agreements to reduce employment or hiring or recruiting or even cold calling by Defendants as a whole or by individual Defendants such as Google or Intel

76. Each alleged NCC agreement precluded cold calls between a pair of Defendants, but the agreements not to cold call did not even attempt to restrict any other forms of recruiting activity or cold calls to other firms.[69] If Defendants had wanted to suppress compensation by restricting cold calling, and even assuming the viability of Plaintiffs' theory about the effect of cold calling on compensation, Defendants would at a minimum have needed to restrict the overall amount of cold calling; merely restricting cold calling between various pairs of themselves would not have been enough.[70]

77. The NCC agreements, considered individually or collectively, also did not restrict how many individuals Defendants employed, but, rather, minimally restricted one channel for how Defendants recruited the individuals they employed. By restricting how Defendants recruited the individuals they employed, any one of the agreements could have resulted in some individual class members missing out on more attractive employment opportunities, and, symmetrically, other class members benefiting from these more attractive employment opportunities. Because one class member's loss would be another class member's gain, the

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[69] "Q: As far as you understand, was there any agreement among the defendants on the number of people they would hire? A: You mean in total, the individual would hire in total, not just from each other. No. I'm not aware of any such agreement." Deposition of Alan Manning, *In Re: High-Tech Employee Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, November 14, 2013, p. 170.

[70] A simple example illustrates this point. Plaintiffs' theory is that no-cold-call agreements reduce the amount of information available in the labor market, and less information in the labor market causes suppressed compensation. Suppose that there are four firms (A, B, C, and D) that compete for labor. Firms A and B agree not to cold call each other's employees. Firms C and D agree not to cold call each other's employees. In cases where firm A would have cold called an employee of firm B, firm A now cold calls an employee of firm C or D. Firms B, C, and D make similar shifts in who they cold call. The same information flows among firms A, B, C, and D with or without the two bilateral no-cold-call agreements. It follows that according to Plaintiffs' theory, the two bilateral no-cold-call agreements would have no effect on compensation.

agreements would not have had meaningful anticompetitive effects. If Defendants had wanted to suppress compensation, it would make no sense to create a conspiracy that had no mechanism to reduce overall compensation.

B. The NCC agreements covered a very small percentage of the class members' potential employers

78. An overarching conspiracy to suppress class members' compensation would need to include a substantial percentage of class members' potential employers to be successful. In economic terms, a group of employers cannot suppress compensation if it does not have market power—if it does not control enough hiring in the market to affect the amount purchased (here, jobs) or the price (here, compensation). A simple example illustrates why. Suppose that an employee has fifty potential employers. If six of those employers conspire to suppress compensation, the employee can still turn to forty-four other employers. These "outside options" constrain the six conspiring employers. Attempts to suppress the compensation of employees who have so many alternative employment options cannot be successful because employees will leave. Such a conspiracy would not have the market power required to suppress compensation.

79. The NCC agreements at issue in this matter covered a very small percentage of the class members' potential employers. The agreements, in fact, did not even restrict cold calling between most pairs of Defendants. For example, the Google-Intel Agreement (as I have assumed) prohibited Google and Intel from cold calling each other's employees, but Intel could cold call the employees of each of the other Defendant firms, and all of the other Defendant firms, as well as scores of other potential employers, could cold call Intel's

employees. Plaintiffs' claim that Intel was part of an overarching conspiracy to suppress compensation does not make sense from an economic perspective. The alleged overarching conspiracy could not have been successful.

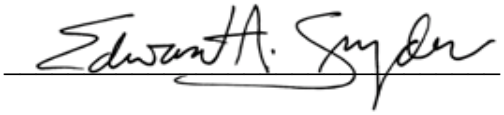
C. The Google-Intel Agreement was in Intel's individual self-interest without regard to the alleged overarching conspiracy and the other five NCC agreements

80. The Agreement fostered Google and Intel's collaborations whether or not the other Defendants were cold calling each other's employees. There could be no basis therefore to infer from that Agreement that Intel must have been party to some larger conspiracy. Further, independent of or in combination with the Google-Intel Agreement, the other five NCC agreements were not in Intel's individual self-interest, especially if one accepts Plaintiffs' theory of harm. The other five NCC agreements each could have caused Intel's employees to receive more cold calls by diverting those calls from, for example, Adobe, Intuit, or Apple. Under Plaintiffs' theory, with which I do not agree, those additional cold calls would have put upward pressure on the compensation that Intel needed to pay its employees. If Intel's intention had been to suppress class members' compensation, joining the alleged overarching conspiracy would be directly contrary to its interests and therefore make no sense.

81. Dr. Marx asserts that it "'strains credulity' that such identical agreements could have been reached in isolation."[71] As I have explained, the Google-Intel Agreement was in Intel's

[71] Marx Report, October 28, 2013, ¶ 10. Here, Dr. Marx is citing the Order Granting in Part and Denying in Part Defendants' Joint Motion to Dismiss; Denying Lucasfilm LTD.'s Motion to Dismiss, *In Re: High-Tech Employees Antitrust Litigation*, United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, April 18, 2012, at 14:7-19.

individual self-interest independent of the other five NCC agreements, and the other five NCC agreements were not in Intel's individual self-interest, especially if one accepts Plaintiffs' theory of harm. It follows that Intel's interest in the Google-Intel Agreement was unrelated to the existence of the other five bilateral NCC agreements. That Intel entered into a NCC agreement with Google around the same time that other firms entered into their own bilateral NCC agreements does not in any way suggest that Intel's decision was anything but independent conduct.

Dated: December 6, 2013 

Edward A. Snyder

Exhibit 1a
Firms in Defendants' Primary Industries
U.S. Firms with At Least 20 Employees

NAICS Code	NAICS Industry Description	Defendant Firms[1,2]							Number of Firms				
		Adobe	Apple	Google	Intel	Intuit	Lucasfilm	Pixar	2005	2006	2007	2008	2009
33411	Computer and peripheral equipment manufacturing		X						421	420	391	391	353
33441	Semiconductor and electronic component manufacturing				X				1,942	1,913	1,889	1,887	1,726
51121	Software publishers	X				X			1,641	1,599	1,548	1,729	1,605
51211	Motion picture and video production						X	X	527	542	528	541	506
51821	Data processing, hosting and related services			X					1,877	1,832	1,814	2,263	2,168
Total									**6,408**	**6,306**	**6,170**	**6,811**	**6,358**

Notes:

[1] For each Defendant, the SIC (Standard Industry Classification) code was identified using the U.S. SEC EDGAR database. The SIC code for each Defendant was then matched to NAICS (North American Industry Classification System) codes using the SIC-NAICS crosswalks available from NAICS. Where more than one NAICS code was available for a given SIC code, the most relevant NAICS code was selected. The number of firms for each NAICS code was obtained from the Statistics of U.S. Businesses.

[2] For every NAICS 5-digit code, firms with fewer than 20 employees are excluded.

Sources:

[1] Company SIC identifier, U.S. Securities and Exchange Commission, available at http://www.sec.gov/edgar/searchedgar/companysearch.html.

[2] SIC-NAICS crosswalks, NAICS Association, available at http://www.naics.com/search.htm.

[3] Statistics of U.S. Businesses, U.S. Census Bureau, available at http://www.census.gov/econ/susb.

Exhibit 1b
Firms in Defendants' Primary Industries
Firms in California with At Least 20 Employees

NAICS Code	NAICS Industry Description	Defendant Firms[1,2]							Number of Firms		
		Adobe	Apple	Google	Intel	Intuit	Lucasfilm	Pixar	2007	2008	2009
33411	Computer and peripheral equipment manufacturing		X						112	110	91
33441	Semiconductor and electronic component manufacturing				X				545	539	500
51121	Software publishers	X				X			432	497	448
51211	Motion picture and video production						X	X	208	214	213
51821	Data processing, hosting and related services			X					317	434	409
Total									**1,614**	**1,794**	**1,661**

Notes:

[1] For each Defendant, the SIC (Standard Industry Classification) code was identified using the U.S. SEC EDGAR database. The SIC code for each Defendant was then matched to NAICS (North American Industry Classification System) codes using the SIC-NAICS crosswalks available from NAICS. Where more than one NAICS code was available for a given SIC code, the most relevant NAICS code was selected. The number of firms for each NAICS code was obtained from the Statistics of U.S. Businesses.

[2] For every NAICS 5-digit code, firms with fewer than 20 employees in California are excluded. State-level data on the number of firms by industry are available starting in 2007.

Sources:

[1] Company SIC identifier, U.S. Securities and Exchange Commission, available at http://www.sec.gov/edgar/searchedgar/companysearch.html.

[2] SIC-NAICS crosswalks, NAICS Association, available at http://www.naics.com/search.htm.

[3] Statistics of U.S. Businesses, U.S. Census Bureau, available at http://www.census.gov/econ/susb.

Exhibit 2a
Defendants' Collective Annual Percentage of U.S.-Based High Technology Employees

Defendants' Employee Counts	**2005**	**2006**	**2007**	**2008**	**2009**
Adobe	2,334	2,528	2,601	2,578	2,799
Apple	3,925	4,046	4,560	5,340	5,921
Google	2,306	3,855	5,434	6,719	7,199
Intel	32,341	33,122	30,640	29,843	28,449
Intuit	2,068	2,068	2,684	2,639	2,547
Lucasfilm	139	284	378	422	387
Pixar	505	581	619	702	741
Defendants' Total[1]	**43,618**	**46,484**	**46,916**	**48,243**	**48,043**
Total U.S.-Based High Technology Employees[2]	**2,160,490**	**2,191,190**	**2,253,580**	**2,317,000**	**2,276,540**
Defendant-Specific Percentages					
Adobe	0.1%	0.1%	0.1%	0.1%	0.1%
Apple	0.2%	0.2%	0.2%	0.2%	0.3%
Google	0.1%	0.2%	0.2%	0.3%	0.3%
Intel	1.5%	1.5%	1.4%	1.3%	1.2%
Intuit	0.1%	0.1%	0.1%	0.1%	0.1%
Lucasfilm	0.0%	0.0%	0.0%	0.0%	0.0%
Pixar	0.0%	0.0%	0.0%	0.0%	0.0%
Defendants' Collective Percentage	**2.0%**	**2.1%**	**2.1%**	**2.1%**	**2.1%**

Notes:

[1] The total number of high technology employees working for the Defendants is calculated based on the technical employee classifications defined by Dr. Leamer.

[2] The job titles of high technology employees working for the Defendants were matched to the occupational titles provided by the BLS Standard Occupational Classification (SOC) table. The BLS SOC table contains numerically coded values for these occupational titles. The occupational codes selected from the BLS data are 11-3021, 11-9041, 15-1011, 15-1021, 15-1031, 15-1032, 15-1111, 15-1131, 15-1132, 15-1133, 17-2061, 17-2071, 17-2072, 17-3012, and 17-3023.

Sources:

[1] Backup Production to Expert Report of Edward E. Leamer, *In Re: High-Tech Employees Antitrust Litigation* , October 1, 2012.

[2] Backup Production to Expert Report of Edward E. Leamer, *In Re: High-Tech Employees Antitrust Litigation* , October 28, 2013.

[3] Occupational Employment Statistics, Bureau of Labor Statistics, available at http://www.bls.gov/oes.

Exhibit 2b
Defendants' Collective Annual Percentage of California-Based High Technology Employees

Defendants' Employee Counts	**2005**	**2006**	**2007**	**2008**	**2009**
Adobe	1,705	1,875	1,907	1,906	1,908
Apple	3,596	3,756	4,255	5,015	5,563
Google	1,863	2,979	4,149	4,801	5,138
Intel	10,003	9,866	9,045	8,799	7,936
Intuit	1,295	1,395	1,843	1,960	1,891
Lucasfilm	139	284	378	422	387
Pixar	496	572	608	689	727
Defendants' Total[1]	**19,097**	**20,727**	**22,185**	**23,592**	**23,550**
Total California-Based High Technology Employees[2]	**337,040**	**339,700**	**341,200**	**346,290**	**338,180**
Defendant-Specific Percentages					
Adobe	0.5%	0.6%	0.6%	0.6%	0.6%
Apple	1.1%	1.1%	1.2%	1.4%	1.6%
Google	0.6%	0.9%	1.2%	1.4%	1.5%
Intel	3.0%	2.9%	2.7%	2.5%	2.3%
Intuit	0.4%	0.4%	0.5%	0.6%	0.6%
Lucasfilm	0.0%	0.1%	0.1%	0.1%	0.1%
Pixar	0.1%	0.2%	0.2%	0.2%	0.2%
Defendants' Collective Percentage	**5.7%**	**6.1%**	**6.5%**	**6.8%**	**7.0%**

Notes:
[1] The total number of high technology employees working for the Defendants is calculated based on the technical employee classifications defined by Dr. Leamer.
[2] The job titles of high technology employees working for the Defendants were matched to the occupational titles provided by the BLS Standard Occupational Classification (SOC) table. The BLS SOC table contains numerically coded values for these occupational titles. The occupational codes selected from the BLS data are 11-3021, 11-9041, 15-1011, 15-1021, 15-1031, 15-1032, 15-1111, 15-1131, 15-1132, 15-1133, 17-2061, 17-2071, 17-2072, 17-3012, and 17-3023.

Sources:
[1] Backup Production to Expert Report of Edward E. Leamer, *In Re: High-Tech Employees Antitrust Litigation* , October 1, 2012.
[2] Backup Production to Expert Report of Edward E. Leamer, *In Re: High-Tech Employees Antitrust Litigation* , October 28, 2013.
[3] Occupational Employment Statistics, Bureau of Labor Statistics, available at http://www.bls.gov/oes.

Exhibit 3a

Intel's Technical Employee Flows[1]

		New Hires				Departures			
Year	**Number of Employees**	**All**	**From Google[2]**	**From Any Other Defendant[3]**	**From Non-Defendants[4]**	**All**	**To Google[5]**	**To Any Other Defendant[6]**	**To Non-Defendants[7]**
2002	35,418	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2003	33,766	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2004	33,956	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2005	37,692	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2006	38,000	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2007	34,755	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2008	33,642	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2009	31,936	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2010	32,202	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2011	34,804	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Notes:

[1] The total number of employees in year t equals the number of employees in year t-1, minus all departures in year t-1, plus all new hires in year t, plus all employees hired through acquisitions (not shown). Employees are classified as "technical" or "non-technical" by Dr. Leamer according to their job title, and new hires and departures typically assume a new job title when moving to a new employer. In this analysis, employees are considered to be "technical" if they were ever classified by Dr. Leamer as "technical" during any time period in the data.

[2] New hires from Google are identified as employees who were employed by Google no more than three months prior to being employed by Intel.

[3] New hires from any other Defendant are identified as employees who were employed by a Defendant company other than Google no more than three months prior to being employed by Intel.

[4] New hires from non-Defendants are identified as employees who were not employed by another Defendant company within three months of being employed by Intel. Employees who were previously employed by Intel but were not employed by Intel or any other Defendant for at least a year, and were then hired by Intel at a later date, are considered to be new hires.

[5] Departures to Google are identified as employees who were employed by Intel no more than three months prior to being employed by Google.

[6] Departures to any other Defendant are identified as employees who were employed by Intel no more than three months prior to being employed by a Defendant company other than Google.

[7] Departures to non-Defendants are identified as all employees who left Intel and are not identified as departing to another Defendant company.

[8] Shaded rows indicate the period of the alleged agreements.

Sources:

[1] Backup Production to Expert Report of Edward E. Leamer, *In Re: High-Tech Employee Antitrust Litigation*, October 1, 2012.

[2] Backup Production to Expert Report of Edward E. Leamer, *In Re: High-Tech Employee Antitrust Litigation*, October 28, 2013.

Exhibit 3b
All Defendants' Technical Employee Flows[1]

		New Hires				Departures			
Year	**Number Of Employees**	**All**	**Between Defendants With Alleged Agreements[2]**	**Between Defendants Without Alleged Agreements[3]**	**From Non-Defendants[4]**	**All**	**Between Defendants With Alleged Agreements[5]**	**Between Defendants Without Alleged Agreements[6]**	**To Non-Defendants[7]**
2002	43,826	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2003	42,758	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2004	43,954	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2005	50,480	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2006	53,368	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2007	52,961	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2008	54,118	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2009	53,460	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2010	56,837	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2011	62,948	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Notes:

[1] The total number of employees in year t equals the number of employees in year t-1, minus all departures in year t-1, plus all new hires in year t, plus all employees hired through acquisitions (not shown). Employees are classified as “technical” or “non-technical” by Dr. Leamer according to their job title, and new hires and departures typically assume a new job title when moving to a new employer. In this analysis, employees are considered to be “technical” if they were ever classified by Dr. Leamer as “technical” during any time period in the data.

[2] New hires from Defendants with alleged agreements are identified as employees who were employed by a Defendant no more than three months prior to being employed by a different Defendant with which there was an alleged agreement.

[3] New hires from Defendants with no alleged agreements are identified as employees who were employed by a Defendant no more than three months prior to being employed by a different Defendant with which there was no alleged agreement.

[4] New hires from non-Defendants include all new hires not identified as being previously employed by another Defendant company. Employees who were previously employed by a Defendant company but were not employed by that same Defendant company or any other Defendant company for at least a year, and were then hired by that same Defendant company at a later date, are also considered to be new hires.

[5] Departures to Defendants with alleged agreements are identified as employees who were employed by a Defendant no more than three months prior to being employed by a different Defendant with which there was an alleged agreement. The number of departures to Defendants with alleged agreements are not necessarily equal to the number of new hires from Defendants with alleged agreements because the date of hire can occur in the year following the date of departure.

[6] Departures to Defendants without alleged agreements are identified as employees who were employed by a Defendant no more than three months prior to being employed by a different Defendant with which there was no alleged agreement. The number of departures to Defendants without alleged agreements are not necessarily equal to the number of new hires from Defendants without alleged agreements because the date of hire can occur in the year following the date of departure.

[7] Departures to non-Defendants are identified as all employees who left a Defendant and are not identified as departing to another Defendant company.

[8] Shaded rows indicate the period of the alleged agreements.

Sources:

[1] Backup Production to Expert Report of Edward E. Leamer, *In Re: High-Tech Employee Antitrust Litigation* , October 1, 2012.

[2] Backup Production to Expert Report of Edward E. Leamer, *In Re: High-Tech Employee Antitrust Litigation* , October 28, 2013.

Exhibit 4
Top 20 Previous Employers of Intel Hires
Technical Employees[1]

Rank[2]	Previous Employer	Total Number of Hires	Conspiracy Period[3]		Post-Conspiracy Period[4]	
			Number of Hires	Percentage of Total Hires	Number of Hires	Percentage of Total Hires
[redacted]						
Total						

Notes:
[1] Technical employees are identified using the variable "ReqJobCodeDescr" in the Intel recruiting data cleaned by Dr. Murphy.
[2] Rank for previous employer is based on total hires for the time period that the data were available.
[3] Conspiracy period hires include data from 2007-2009. Recruiting data for Intel are incomplete for earlier years.
[4] Post-conspiracy period hires include all hires from 2010 through 2012 for whom prior employment could be determined. [redacted]
[5] Other non-Defendants include other named non-Defendants as well as other previous employers identified as "Other" in Dr. Murphy's data.
[6] [redacted].

Source:
[1] Backup Production to Expert Report of Kevin M. Murphy, *In Re: High-Tech Employee Antitrust Litigation* , November 12, 2012.

Exhibit 5
Selected Google and Intel Technical Collaborations

Collaboration Projects	Start Date	Description
Google Motherboards	2003	Intel began designing motherboards for Google data centers in 2003.
Google Data Center Efficiency	2005	Intel collaborated with Google to build energy-efficient chips for Google data centers.
Google Search Optimization	2006	Intel worked with Google to improve Google's search engine speed, performance and efficiency on Intel chips.
Viiv Digital Media Platform	2006	Intel collaborated with Google to enchance consumers' experience with Intel's Viiv Technology Platforms by incorporating Google Video features.
Climate Savers Computing Initiative	2007	The Google Data Center Efficiency project developed into the Climate Savers Computing Initiative Project. In this project, Intel, Google, Dell, EDS, EPA, HP, Lenovo, Microsoft, PG&E, World Wildlife Fund and several additional organizations collaborated to promote the use of energy-efficient computers. In addition to the Google and Intel employees that were involved in the Google Data Center Efficiency project, approximately 20 more collaborated in the Climate Savers Computing Initiative project.
Open Handset Alliance	2007	Google, Intel and 82 other technology and mobile device companies formed the Open Handset Alliance committed to the development of the Android platform, and handsets and services that use this platform. At least 1,000 Google employees worked on Android related projects.
WiMAX Mobile Broadband Network	2008	Google, Intel and other companies invested in a new wireless communication company called Clearwire to develop the first WiMAX Mobile Broadband Network. Intel planned to incorporate WiMAX chips into its processor and advertise WiMAX service while Google planned to develop WiMAX's internet services.
Google Native Client	2008	Intel and Google collaborated to develop the Google Native Client that uses Intel x86 native code to run web-based applications more efficiently.
Netbook Operating System - Google Chrome OS (Atom Netbook/Pine Trail-M Netbook); Linux-based Chrome Operating System	2008	Intel collaborated with Google to develop the Google Chrome Netbook Operating System. At least 1,000 Google employees and more than 1,000 Intel employees worked on Google Chrome related projects.
Android-based Operating System & Mobile Internet Devices (MIDs)	2008	Intel and Google announced their participation on a joint project that uses the Android-based Operating System on Mobile Internet Devices (MIDs). At least 1,000 Google employees worked on Android related projects.
Google TV	2008	Google collaborated with Intel, Sony, Logitech, Best Buy, DISH Network, and Adobe to launch Google TV that enables consumers to search across content provided by TV providers, web and mobile applications. Fifteen engineers from Google worked exclusively on the Google TV project and around 1,000 engineers from the Chrome and Android teams supported the Google TV project.
Android Platform for Intel Architecture (Intel's family of low power Atom processors)	2011	Google and Intel announced plans to integrate Android mobile phones with Intel technology and architecture. These phones were to be made available in the first half of 2012. At least 1,000 Google employees worked on Android related projects.
Chromebooks based on Haswell Microarchitecture	2013	Google and Intel, along with Acer introduced Chromebooks based on Haswell microarchitecture that use Intel processors. At least 1,000 Google employees and more than 1,000 Intel employees worked on Google Chrome related projects.

Note:
[1] The exact start dates for many collaborations could not be identified. In these cases, the “Start Date” refers to the earliest date at which the collaboration could be verified.

Exhibit 5
Selected Google and Intel Technical Collaborations

Sources:

[1] "Intel and Google Join with Dell, EDS, EPA, HP, IBM, LENOVO, Microsoft, WWF and Others to Launch Climate Savers Computing Initiative," World Wildlife Fund Press Release, June 12, 2007, http://worldwildlife.org/press-releases/intel-and-google-join-with-dell-eds-epa-hp-ibm-lenovo-microsoft-wwf-and-others-to-launch-climate-savers-computing-initiative.

[2] "Sprint and Clearwire to Combine WiMAX Businesses, Creating a New Mobile Broadband Company," Intel, May 7, 2008, http://www.intel.com/pressroom/archive/releases/2008/20080507corp_a.htm.

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[4] Myslewski, Rik, "Intel cozying up to Google Chrome OS," *The Register* , July 10, 2009, http://www.theregister.co.uk/2009/07/10/intel_google_chrome_os.

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[11] "Open Handset Alliance – FAQ," Open Handset Alliance, November 2007, http://www.openhandsetalliance.com/oha_faq.html.

[12] "Industry Leaders Announce Open Platform for Mobile Devices," Open Handset Alliance, November 5, 2007, http://www.openhandsetalliance.com/press_110507.html.

[13] Meyers, David, "Intel to Help with Chrome for Netbooks," *ZDNet* , September 16, 2009, http://www.zdnet.com/news/intel-to-help-with-chrome-for-netbooks/343152.

[14] "Google, Intel Announce Partnership For Android Phones," *Huffington Post,* November 13, 2011, http://www.huffingtonpost.com/2011/09/13/google-intel-partnership-android_n_960487.html.

[15] 76570DOC000099 to 102.

[16] 76570DOC000104 to 105.

[17] 76602DOC003854 to 855 at 854.

[18] Deposition of Renee James, *In Re: High-Tech Employee Antitrust Litigation,* United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, March 22, 2013, pp. 154-156, 228-229, 232, 234-235.

[19] Deposition of Paul Otellini, *In Re: High-Tech Employee Antitrust Litigation* , United States District Court, Northern District of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, January 29, 2013, pp. 83-87.

[20] Intel's Objections and Amended and Supplemented Responses to Plaintiffs' Second Set of Interrogatories, *In Re: High-Tech Employee Antitrust Litigation* , United States District Court, Northern Division of California, San Jose Division, Master Docket No. 11-CV-2509-LHK, March 12, 2013, pp. 7-9.

APPENDIX A

EDWARD A. SNYDER

Curriculum Vitae

CONTACT INFORMATION:

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Yale School of Management
P.O. Box 208200
New Haven, CT 06520-8200

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Yale School of Management
135 Prospect Street
New Haven, CT 06520

office tel.: 203-432-6037

website: edwardasnyder.com

EDUCATION

B.A., Colby College, 1975 (Economics, Government)

M.A., University of Chicago, 1978 (Public Policy)

Ph.D., University of Chicago, 1984 (Economics)

POSITION (July 1, 2011 to Present)

Yale School of Management, Yale University
Dean and William S. Beinecke Professor of Economics and Management

Major research interests: Industrial Organization, Antitrust Economics, Law and Economics, Financial Institutions.

Decanal Responsibilities:

Overall academic, financial, and administrative leadership of Yale School of Management.

Member of the Yale University Cabinet.

Member of three-person Senior Advisory Board overseeing Yale Entrepreneurial Institute.

Member of the Yale School of Management Board of Advisors.

Member of Yale SOM's Appointments, Curriculum, and Strategy Committee.

Chair, Steering Committee, Global Network for Advanced Management.

Teaching responsibilities: Global Competition Policy and Enforcement (co-taught with Pierre Cremieux and Fiona Scott Morton).

Major achievements and initiatives:

- Introduction of new Leadership Development Program in school's three Masters-level programs.
- Conception and development of the Global Network for Advanced Management, a network of 23 top business schools, and related programs.
- Conception and introduction of the Master of Advanced Management – a new, one-year degree program, post-MBA, for students from the Global Network for Advanced Management.
- Establishment of the Initiative for Organizational Performance
- Development and introduction of Foundational Courses for Yale Master-level students

PREVIOUS APPOINTMENTS

University of Chicago, Booth School of Business
Dean, University of Chicago Booth School of Business (July 1, 2001 to June 30, 2010); George Shultz Professor of Economics (July 1, 2001 to June 30, 2011).

Decanal Responsibilities: Overall academic, financial, and administrative leadership of the school.

Teaching responsibilities: Economic Analysis of Major Policy Issues (co-taught with Gary S. Becker and Kevin M. Murphy).

Editor: Journal of Law & Economics (2002 – 2009).

Major achievements and initiatives:

- Dramatic increases in the number of endowed faculty professorships, endowed faculty fellowships, and the endowments in research and teaching centers.
- Nine years of 17.1% annual growth of MBA scholarship support.
- Naming of the school with unrestricted funds provided by David Booth – the largest gift ($300m) to the University of Chicago and the largest gift ever to a business school.
- Increased the school's endowment from approximately $200m in 2001 to over $500m, independent of the Booth gift.
- Substantial improvements in the influence, visibility, and recognition of the school, including improved rankings, e.g., BusinessWeek #1 rankings in 2006, 2008, and 2010, and Economist #1 rankings in 2006 and 2009.
- Improvements in the quality and diversity of the MBA classes.
- Large increases in support for PhD students, including dramatic increases in endowment for PhD program.
- Established the Global Advisory Board, with Councils for Asia; the Americas; and Europe, Middle East, and Africa.

- Oversaw the launch of the Initiative on Chicago Price Theory, which became the Becker Center.
- Developed funding for the Fama-Miller Center.
- Successfully moved the School's Europe Campus from Barcelona to London.
- Moved into the school's new campus (Harper Center) in Hyde Park on time and on budget.
- Developed first-of-kind positioning advertising campaign by a business school.
- Appointments of two women to decanal positions.
- Elimination of debt on three facilities.
- Cumulative operating surpluses of $100.4m over nine-year period.

Service to the University:

- Member, Academic Leadership Group, July 2001 – June 2010
- Oversight Responsibilities for two University Centers (Stigler Center and Becker Center)
- Member, Provost Ad Hoc Tenure Review Committees, 2002 – 2010
- Member, Board of Directors, Argonne National Laboratories, July 2008 – June 2010
- Member of various Dean and VP Search Committees, 2003 – 2009
- Advisory work on University's globalization efforts, 2007 - 2010
- Member, Social Sciences Deans Group, 2009 – 2010

University of Virginia
Dean and Charles C. Abbott Professor of Business Administration (July 1998 – June 2001)

Decanal Responsibilities: Overall academic, financial, and administrative leadership of the Darden School.

Major achievements and initiatives:

- First MBA Program growth in 24 years.
- Increase in nine-year capital campaign from $98m to $212m.
- Established Financial Self-Sufficiency for the Darden School, eliminating reliance on unrestricted state support.
- Initiated Phase II of new Darden Grounds.
- Increased diversity of MBA classes.
- Appointments of two women to decanal positions.
- Appointments of two African-Americans to faculty positions.
- Innovative programs on e-business with global partners.
- Established program partnerships with University of Michigan and University of California at Berkeley.

University of Michigan
Senior Associate Dean, University of Michigan Business School (1995-1998)

Responsibilities: MBA Programs (full-time, evening, global); BBA Program, and Masters of Accounting Program. Managed many of the School's international programs and corporate relationships. Oversight of Admissions & Student Services and the Office of Career Development. Significant responsibility for faculty recruitment and development. Member of School's Executive Committee.

Major achievements and initiatives:

- Global initiatives including International Multi-disciplinary Action Program (IMAP) and Brazil node of Global MBA program.
- Integration of admissions and career development functions.
- Rationalization of real estate curriculum.

Director, Davidson Institute at the University of Michigan Business School (1992-1995)

Responsibilities: Executive and academic leadership to establish a legally-independent Institute focused on business and public policy issues in transition economies and emerging markets.

Major achievements and initiatives:

- Developed corporate relationships in China, Central Europe, India, and Russia, and with U.S. firms committed to operating in transition economies.
- Major research initiative on bank privatization in Central Europe and Russia.
- Design and development of in-company projects involving teams of Master's level students working in transition economies.
- Design and delivery of executive education programs for managers from transition economies.
- Progressive increases in outside funding contributing to a $3m quasi-endowment for the Institute.

Chair, Business Economics and Public Policy (1992-1995)

Responsibilities: Curriculum and staffing of BBA and MBA courses. Faculty development of group of 11 faculty members specializing in business economics.

Faculty Member (1982-1994)

Responsibilities: MBA Core course coordinator of *Applied Microeconomics* (four years). Design and development of *Competitive Tactics*, a course analyzing competition and cooperation among firms; marketing and distribution of products; and related antitrust issues.

Member, Board of Directors, Davidson Institute (focusing on transition economies and emerging markets) (1995-1998)

Member, Executive Committee, Tauber Manufacturing Institute, University of Michigan (1996-1998)

Member, Executive Committee, Erb Institute (focusing on environmental management), University of Michigan (1996-1998)

Research Consultant, Federal Home Loan Bank Bd. / U.S. Sen. Comm. on Banking (1989).

Consultant, Antitrust Division, U.S. Department of Justice (1982-1985)

University of Chicago

John M. Olin Visiting Associate Professor, Center for the Study of the Economy and the State (1991-1992)

Antitrust Division, U.S. Department of Justice

Economist (1978-1982)

Staff Economist, National Commission to Review Antitrust Laws and Procedures (1978-1979)

PUBLICATIONS

Articles in Journals:

"Proof of Common Impact in Antitrust Litigation: The Value of Regression Analysis," (Co-authors: Pierre Cremieux and Ian Simmons), The George Mason Law Review, Summer 2010, pp. 939-967.

"Bank Privatization in Transitional Economics: A General Framework with Application to Hungary's Magyar Kulkereskedelmi Bank Transaction," (Co-authors: Karen Schnatterly, Roger C. Kormendi and Christopher Jereb), The Financier , vol. 5, No. 2 & 3 (1998), pp. 6-23.

"Allocation of Litigation Costs--American and English Rules," (Co-author: James W. Hughes) in The New Palgrave Dictionary of Economics and the Law, ed. Peter Newman, Macmillan Publishers Ltd, vol. 51 (1998), pp. 51-56.

"Transactional Structures of Bank Privatizations in Central Europe and Russia," (Co-author Anna Meyendorff), Journal of Comparative Economics, (August 1997), pp. 5-30.

"Privatization and Performance of the Czech Republic's Komercni Banka," (Co-author: Roger C. Kormendi), Journal of Comparative Economics, (August 1997), pp. 97-128.

"Litigation under the English and American Rules: Theory and Evidence," (Co-author: James W. Hughes), Journal of Law & Economics, vol. 38 (April 1995), pp. 227-250.

"*United States v. United Shoe Machine Corporation*: On the Merits," (Co-author: Scott E. Masten), Journal of Law & Economics, vol. 36 (April 1993), pp. 33-70.
Reprinted in Transaction Cost Economics, vol. 2, O. Williamson and S. Masten, eds., (Edward Elgar Publishing, Ltd., London), 1995, pp. 588-625.
Reprinted in Case Studies in Contracting and Organization, S. Masten, ed., (Oxford University Press), 1996, pp. 224-254.
Reprinted in Journal of Reprints for Antitrust Law and Economics, issue on Landmark Antitrust Decisions Revisited, 26, 1997, pp. 643-680.
Reprinted in Pricing Tactics, Strategies, and Outcomes, (M. Waldman & J. Johnson, ed.). Cheltenham, UK: Edward Elgar Publishing. 2007

"Misuse of the Antitrust Laws: The Competitor Plaintiff," (Co-author: Thomas E. Kauper), Michigan Law Review, vol. 90, (December 1991), pp. 551-603.
Reprinted in The Journal of Reprints for Antitrust Law and Economics, vol. 25, no. 2, (1995), pp. 657-709.

"The Costs of Organization," (Co-authors: Scott E. Masten and James W. Meehan, Jr.), Journal of Law, Economics, and Organization, vol. 7, (Spring 1991), pp. 1-25. Reprinted in Transaction Cost Economics, vol. 2, O. Williamson and S. Masten, eds., (Edward Elgar Publishing, Ltd., London), 1995, pp. 119-143.

"The Effect of Higher Criminal Penalties on Antitrust Enforcement," Journal of Law & Economics, vol. 33, (October 1990), pp. 439-462.

"The English Rule for Allocating Legal Costs: Evidence Confronts Theory," (Co-author: James W. Hughes), Journal of Law, Economics, and Organization, vol. 6, (Fall 1990), pp. 345-380.

"The Design and Duration of Contracts: Strategic and Efficiency Considerations," (Co-author: Scott E. Masten), Law and Contemporary Problems, vol. 52 (Winter 1989), pp. 63-85.

"The Origins and Resolution of the Thrift Crisis," (Co-authors: Roger C. Kormendi, Victor L. Bernard, S. Craig Pirrong), Journal of Applied Corporate Finance, vol. 2 (Fall 1989), pp. 85-100.

"Vertical Integration in the U.S. Auto Industry: A Note on the Influence of Transactions Specific Assets," (Co-authors: Scott E. Masten, James W. Meehan, Jr.), Journal of Economic Behavior and Organization, vol. 12 (October 1989), pp. 265-73.

"New Insights into the Decline of Antitrust Enforcement," Contemporary Policy Issues, vol. 7 (October 1989), pp. 1-18.

"Policy Analysis of Medical Malpractice Reforms: What Can We Learn from Claims Data?" (Co-author: James W. Hughes), Journal of Business & Economic Statistics, vol. 7, (October 1989), pp. 423-431.

"Evaluating Medical Malpractice Reforms," (Co-author: James W. Hughes), Contemporary Policy Issues, vol. 7, (April 1989), pp. 83-98.

"An Inquiry into the Efficiency of Private Antitrust Enforcement," (Co-Author: Thomas E. Kauper), Georgetown Law Journal, vol. 74, (April 1986), pp. 401-469.

"Efficient Assignment of Rights to Sue for Antitrust Damages," Journal of Law & Economics, vol. 28, (May 1985), pp. 469-482. Reprinted in The Journal of Reprints for Antitrust Law and Economics, vol. 25, no. 2, (1995), pp. 969-982.

Books / Articles in Books:

"Five Easy Questions", Ch.2.3, in Leadership Development for a Global World: The Role of Companies and Business Schools, J.Canals (ed.), Palgrave Macmillan Ltd. Houndmills, Basingstoke, London 2012, pp. 145-160.

Globalization of Management Education: Changing International Structures, Adaptive Strategies, and the Impact on Institutions, (Co-authors: Chair of AACSB Taskforce Robert F. Bruner, et al.), Emerald Group Publishing, (2011).

"Social Learning and Transaction Cost Economics," Advances in Strategic Management, A. Huff and J. Walsh, eds., (1997), pp. 223-228.

Crisis Resolution in the Thrift Industry, (Co-authors: Roger C. Kormendi, Victor L. Bernard, S. Craig Pirrong), Kluwer Academic Press, (1989).

"Private Antitrust Cases That Follow on Government Cases," (Co-Author: Thomas E. Kauper) in Private Antitrust Enforcement: New Learning and New Evidence, ed. Lawrence J. White, M.I.T. Press, (1988), pp. 329-370.

"Minimizing Waste Water Treatment Costs at the Plant Level," (Co-Author: Dan Yaron) in Environmental Policy, vol. II, ed. George Tolley, et al., Ballinger Publishing Co., (1983), pp. 115-136.

Report to the President and the Attorney General of the National Commission for the Review of Antitrust Laws and Procedures, (January 1979), co-authored Chapter 11 on Insurance.

Research in Progress / Working Papers:

"Antitrust Enforcement in the EU and US: An Empirical Assessment of the Influence of Protectionism," (Co-author: Pierre Cremieux), (January 2013).

"The Organization of Global Business Schools," (August 2006).

"Aftermath of the *Sealy* Antitrust Litigation," (Co-author: Michael J. Moore), (June 2006).

"Napsterizing Pharmaceuticals: Access, Innovation, and Welfare," (Co-authors: James W. Hughes and Michael J. Moore), (January 2011).

"Napsterizing' Pharmaceuticals: Access, Innovation, and Consumer Welfare," (Co-authors: James W. Hughes and Michael J. Moore), National Bureau of Economic Research Working Paper, (July 2002).

Book Reviews:

Confessions of an Economic Hit Man, John Perkins, (Berrett Koehler 2004), Journal of Economic Literature, vol. 43 (December 2005), pp. 1063-1065.

Concentration and Price, ed. Leonard W. Weiss, (M.I.T. Press, 1989), Journal of Economic Literature, vol. 30 (September 1991), pp. 1205-1207.

Impact Evaluations of Federal Trade Commission Vertical Restraints Cases, ed. Robert H. Lande, et al., (Federal Trade Commission, 1984), Journal of Economic Literature, vol. 24 (December 1986), pp. 47-48.

Other Publications:

"The Future of §2 Enforcement and the Analysis of Dominant Firms," 2010 Antitrust Section Symposium: New York State Bar Association, pp. 12-23.

"A New Approach to Antitrust Class Certification," (Co-authors: Pierre Cremieux and Ian Simmons), Law 360, (June 14, 2010).

In Re. DAP Antitrust Litigation, Expert Report, The Antitrust Litigation Course, American Bar Association (Antitrust Section), Mock Trial in U.S. District Court for E.D. of Pennsylvania, MDL. Docket No. 1999, (October 4-5, 2007).

Amicus Brief from Group of Industrial Organization Economists to the U.S. Supreme Court, filed August 24, 2006, regarding *Weyerhaeuser Co., v. Ross-Simmons Hardwood Lumber Co., Inc.*, 411 F.3d (9th Cir. 2005).

Amicus Brief from Group of Industrial Organization Economists to the U.S. Supreme Court, filed March 24, 2006, regarding *William Twombly, et al., v. Bell Atlantic Corporation*, et al., 313 F. Supp. 2d 174 (S.D.N.Y. October 7, 2003); *William Twombly, et al., v. Bell Atlantic Corporation, et al.*, 425 F.3d 99 (2d Cir. 2005).

"Bank Privatizations in Central Europe and Russia," Davidson Institute Report to the U.S. Department of Treasury, (March 1996).

"Director's View," The Davidson Window, vol.1, (Winter 1994), pp. 1-2; vol.1, (Summer 1994), pp. 1-2; vol. 1, (Spring 1995), pp. 1-2.

"Transitions in Expertise," The Journal of the International Institute, (Winter 1994), pp. 6-8.

Crisis Resolution in the Thrift Industry: Beyond the December Deals. (Co-authors: Roger C. Kormendi, Victor L. Bernard, S. Craig Pirrong), Report of the Mid America Institute, (March 1989).

Popular Press:

"Is Michigan State Really Better Than Yale?" New York Times, (August 7, 2012).

"Yale Redefines What It Means to Be Global," Wall Street Journal, (June 7, 2012).

"Can 'Ted' Snyder Work His Magic on Yale's School of Management?" Poets & Quants, (February 8, 2012).

"Yale's Big, Audacious Global Bet," Poets & Quants, (February 8, 2012).

"Q&A with Edward Snyder, Dean, Yale School of Management," Business Standard, Mumbai, p. 12, (November 8, 2011).

"If You Get the People Right, They Build the School," Financial Times, (October 17, 2011).

"Turnaround Specialist to Take on Yale," Wall Street Journal, (June 3, 2010).

"The Subtle Strategist," Financial Times, (April 11, 2010).

"Student ≠ Customer," Nytimes.com, Room for Debate, (January 4, 2010).

"2016 Olympics," Chicago Tribune, (September 17, 2009).

"The Party's Over: The Coming Business School Shake-out," BusinessWeek.com, (April 2, 2009).

"Global Learning for a Truly Integrated MBA," Financial Times, (February 19, 2009).

"Driven Mad by Traffic Congestion," Business Week Chicago, (April 2008).

"The Market's Place," Chicago Tribune, (August 12, 2007).

"Advocating a Carbon Tax," CNBC Europe, (February 19, 2007).

"Are B-Schools Slacking Off?" Business Week, (February 11, 2007).

"The Quiet American?" Global Focus, Vol. 1, No. 2, (2007).

"Dean's Column: The Toughest and the Best Advice," Financial Times, (May 15, 2006).

"On MBAs," Financial World, London, (September 2005).

"Are Business Schools Becoming Global," India Times, (August 2005).

"Global Challenge," The Guardian, London, (August 4, 2005).

"Vigorous Competition Better than any Oath," Handelsblatt.com, (September 4, 2003).

"Playing the Game the American Way," Budapest Business Journal, (July 9, 1993).

"An English Reform of American Law," Wall Street Journal, (August 9, 1991).

Business School Cases and Class Materials:

"Alternative Tools to Influence Market and Non-Market Behavior."

"W.R. Grace Co.'s Zonolite Licensee Program: How to Exploit Two Related Monopolies and Improve Economic Efficiency."

"Job Risk."

"Pricing Decisions: Custom Limousines."

"The Choice of Technologies."

"Mimicking the S&P 500."

"Human Capital, Work, and Leisure." Co-author: Scott E. Masten.

"Sugar Quotas." Co-author: Edward J. Mitchell.

GRANTS AND FELLOWSHIPS

Grants from University of Virginia Darden School's Batten Institute and University of Chicago Booth School of Business for major extension of previous research, 2009-10. Resulted in "Napsterizing Pharmaceuticals: Access, Innovation, and Welfare," (January 2011).

Grants from Aventis Pharmaceuticals, University of Chicago Graduate School of Business, University of Virginia Darden School, and Bates College 2000-01. Resulted in "Napsterizing Pharmaceuticals: Access, Innovation, and Consumer Welfare," NBER Working Paper (October 2002).

BT Grant of funds and equipment to the University of Michigan Business School to deliver educational modules using new technologies (November 1995).

U.S. Department of Treasury Grant to the Davidson Institute to study bank privatizations in Central Europe and Russia. Co-investigator: Roger C. Kormendi (June 15, 1995 – December 31, 1995).

Bradley Foundation Grant to study contract mechanisms to protect non-patentable innovations. Co-investigator: Scott E. Masten (July 1, 1989 - June 30, 1990).

RGK Foundation Grant to study contract mechanisms to protect non-patentable innovations. Co-investigator: Scott E. Masten (July 1, 1989 - June 30, 1990).

University of Michigan Office for the Study of Public and Private Institutions Research Grant to study contract mechanisms to protect non-patentable innovations. Co-investigator: Scott E. Masten (Summer 1989).

Robert Wood Johnson Foundation Grant to study the effects of tort reforms on medical malpractice litigation. Co-investigator: James W. Hughes (June 1, 1987 - December 31, 1988).

Earhart Foundation Grant to study the effects of the Supreme Court's *Brunswick* decision on private antitrust litigation (Summer 1986).

University of Michigan Business School Summer Research Grants to study private and public antitrust enforcement and other law and economics issues (1984, 1985, 1989, 1990, 1992, and 1993).

University of Chicago, Committee on Public Policy Studies Fellowship (1978).

INVITED PAPERS, CONFERENCE PRESENTATIONS, TESTIMONY

"American Law and Economics Association, invited paper (with Pierre Cremieux), "Antitrust Enforcement in the EU and US: An Empirical Assessment of the Influence of Protectionism," Vanderbilt University Law School, (May 17, 2013).

"Emerging Markets and Business School Strategies." Invited moderator, International Conference and Annual Meeting for The Association to Advance Collegiate Schools of Business, (April 9, 2013).

"Turkey as a Pivotal Country in the Global Economy." Presentation to DEıK, Foreign Economics Relations Board, Istanbul, Turkey, (November 30, 2012).

"Management Challenges in the Global Economy." Presentation to faculty, students and staff at Renmin University of China School of Business. Beijing, China. (March 2012).

"The Management Education Industry." AACSB Annual Deans Conference Plenary Session with Deans Christine Poon, Joseph Thomas, and Andrew Policano), Phoenix, Arizona, (February 20, 2011).

"U.S. Business Schools and the MBA: A Long Perspective." EFMD Annual Meeting of Deans and Directors, Lyon, France, (January 25, 2011).

"Proof of Common Impact in Antitrust Litigation: The Value of Regression Analysis." George Mason 13th Annual Symposium on Antitrust Law, February 4, 2010; Analysis Group Seminar, New York, NY, (October 20, 2010).

"Digging Out of the Deficit." Executive Roundtable Panel Discussion with Governors Tim Pawlenty (MN), Donald Carcieri (RI), Mark Sanford (SC), Robert McDonnell (VA), and John Kasich, Candidate for Governor (OH), Cincinnati, Ohio, (September 20, 2010).

"Corporate Governance." Inside Counsel's 10th Annual Super Conference, invited panel. Chicago, IL, (May 25, 2010).

"The Future of §2 Enforcement." Antitrust Section of the New York State Bar Association, Annual Meeting, (January 28, 2010).

"Global Antitrust Enforcement." Center for Public Studies, Santiago, Chile, (September 2009).

"Globalization of Management Education." Plenary Speaker at AACSB Annual Deans Conference, San Francisco, CA, (February 5, 2009).

"The Role of Economic Experts in Class Certification in the United States." The American Bar Association Section of Antitrust Law Trial Practice Committee, (June 17, 2008).

"How to Use Economics." Illinois Agricultural Leadership Seminar. Chicago, IL (August 2006).

"Are Business Schools Becoming Truly Global?" with Dean Santiago Iñiguez. AACSB Dean's Conference, San Diego, CA, (February 6, 2006).

"Strategic Choices in a Global Environment." Presentation with Dean Santiago Iñiguez. European Foundation for Management Development Deans' Conference, Rotterdam School of Management, The Netherlands, (January 26, 2006).

"How to Use Economics." Distinguished Alumni Presentation, Colby College, (October 2005).

"Hatch-Waxman and Public Policy Toward Pharmaceuticals." Presentation at Summer 2002 Conference for Western Attorneys General (2002).

Congressional Briefing, "Hatch-Waxman Reconsidered: How Best to Promote Prescription Drug Innovation and Affordability," sponsored by the Alliance for Health Reform and supported by the National Institute of Health Care Management, (June 13, 2002).

Combined Federal Trade Commission and Department of Justice Hearings on Competition and Intellectual Property Policy. Presentation of testimony on Hatch-Waxman and Public Policy Toward Pharmaceuticals, (March 2002).

Graduate Business Conference, Johnson Graduate School of Management, Cornell University, invited panel, The Future of Management Education, (March 2001).

"Economics and Government Policy." Panel Discussion with Edward P. Lazear, Randall S. Kroszner, and Lawrence H. Summers, Honoring Gary S. Becker: A Conference, Chicago, IL, (February 11, 2001).

New York State Bar Association, invited panel on Indirect Purchaser Litigation in Antitrust, New York, NY, (January 2001).

University of Virginia, E-Summit's Plenary Session, (November 1999).

European Association of Comparative Economics, Annual Conference, invited panel, Bank Privatization, Grenoble, France, (September 1996).

University of Chicago, Conference on Tort Reform, Commentator for Steven Shavell, (June 1996).

U.S. Department of Treasury, Davidson Institute, "Banks in Transition: Investment Opportunities in Central Europe and Russia," New York City, (May 1996).

U.S. Department of Treasury, Davidson Institute, "Bank Privatization in Central Europe and Russia," Budapest, (April 1996).

American Law and Economics Association, invited paper (with Greg Niehaus), "Damage Schedules in the Products Liability System and the Efficiency of Consumption Choices," (May 1994).

American Economics Association, invited paper (with James W. Hughes), "Litigation under the English and American Rules: Theory and Evidence," (January 1994).

University of Michigan Presidential Forum on *Constituting International Expertise: Who, What, Where Why, How?* " Transitions in Expertise," (October 1993).

American Law and Economics Association, invited paper (with James W. Hughes), "Litigation under the English and American Rules: Theory and Evidence," (May 1992).

Western Economic Association, 100 Years of the Sherman Act, invited paper (with Thomas E. Kauper), "Misuse of the Antitrust Laws," (June 1990).

Western Economic Association, Applied Microeconomics, invited paper, "Aftermath of the *Sealy* Antitrust Litigation," (June 1990).

Law and Society Association, invited paper (with James W. Hughes), "The English Rule for Allocating Legal Costs: Evidence Confronts Theory," (June 1989).

Duke University, Conference on the Law and Economics of Contracting, invited paper (with Scott E. Masten), "The Design and Duration of Contracts: Strategic and Efficiency Considerations," (April 1988).

U.S. Senate Banking Committee, testimony based on research paper ("The Origins and Resolution of the Thrift Crisis"), (February 1988).

Georgetown University, Conference on Private Antitrust Enforcement, invited paper (with Thomas E. Kauper), "An Inquiry into the Efficiency of Private Antitrust Enforcement," (November 1985).

Hoover Institution, Conference on Antitrust and Economic Efficiency, invited paper, "Efficient Assignment of Rights to Sue for Antitrust Damages," (August 1984).

SEMINARS AND OTHER PRESENTATIONS

University of Chicago

Applied Price Theory Workshop (4/84, 10/84, 10/02).

Economics and Legal Organization Workshop (10/90, 1/92, and 5/92).

University of Virginia, e-Summit (11/99).

U.S Treasury (2/96).

Davidson Institute Research Seminar Series (4/95).

University of Michigan, Center for Chinese Studies (10/94).

Young Presidents Organization, Asia Region Meetings (2/94).

Confederation of Indian Industries, CEO Forum (2/94).

Harvard University Law School, Law and Economics Seminar (4/93).

George Mason University Law School, Law and Economics Seminar (10/92).

University of Illinois, Industrial Organization Workshop (4/92).

Georgetown University Law School, Law and Economics Workshop (11/91).

Cornell University Law School (4/91).

University of Southern California, Applied Micro Workshop (10/90).

University of California at Los Angeles, Industrial Organization Workshop (10/90).

Virginia Polytechnic Institute, Economics Department Seminar (11/89).

Ohio State University, Industrial Organization Seminar (5/88), Microeconomic Theory Workshop (10/86).

Federal Trade Commission (10/88, 10/92).

Western Economic Association (7/87, 7/88, 6/90, and 7/96).

Duke University, Center for the Study of Business Regulation (11/86 and 12/92).

Colby College (5/85, 2/92, 3/96).

U.S. Department of Justice, Antitrust Division (5/85, 5/86, 5/87, 11/89, and 5/91).

Washington University, Industrial Organization Workshop (3/85).

University of Michigan,

Industrial Organization Workshop (2/84, 4/85, 9/86, 1/88, and 3/88).

Law and Economics Seminar (10/89, 4/90, and 1/92).

PH.D. THESIS COMMITTEE SUPERVISION

Alowin M. Th. L. Moses, “A Model of Voucher Privatization” (University of Michigan, 1996).

Vijay Singal, “Efficiency Versus Market Power in Mergers: Evidence from the Airline Industry” (University of Michigan, 1992).

David E. Weinstein, “Essays on Japan's Trade and Industrial Structure” (University of Michigan, 1991).

Debra J. Holt, “Understanding Strategic Choice: The Statistical Analysis of Experimental Games” (University of Michigan, 1990).

David J. Denis, “Asymmetric Information and the Market for Seasoned Equity Offerings: Theory and Evidence” (University of Michigan, 1988).

Amy J. Broman, “The Impact of Federal Income Tax Policy on the Charitable Contributions Behavior of Households” (University of Michigan, 1987).

James W. Hughes, “Tort Reforms and Medical Malpractice Litigation” (University of Michigan, 1986).

Barton L. Lipman, “Delaying or Deterring Entry: A Game-Theoretic Analysis” (University of Michigan, 1985).

OTHER

Trustee, Colby College

International Advisory Committee, School of Business, Renmin University of China

Member of American Law and Economics Association

APPENDIX B

EDWARD A. SNYDER EXPERT TESTIMONY WITHIN THE PAST FOUR YEARS

1. United States District Court, Northern District of California
   TFT-LCD (Flat Panel) Antitrust Litigation, Case No. M-07-1827-SI, DAP Track 1, Individual Case Nos. 09-CV-4997 SI (AT&T), 3:11-CV-00058 SI (Costco), 3:10-CV-00117 SI (Electrograph), 09- CV-5840 SI (Motorola), 3:10-CV-4945 SI (Target), 10-CV-4572-SI (Best Buy), 3:10-CV-01064 SI (Dell), 3:10-CV-05452 (Kodak), 10-CV-3619 (Missouri), 10-CV-3517 (Florida)
   Original, supplemental, and sur-rebuttal reports, deposition, and testimony in Best Buy trial

2. United States District Court, Northern District of California
   TFT-LCD (Flat Panel) Antitrust Litigation, Case No. M-07-1827-SI
   Report regarding class certification and deposition
   Report and sur-reply report regarding damages and deposition

3. United States District Court, Eastern District of Pennsylvania
   King Drug Company of Florence, Inc. et al., v. Cephalon, Inc., et al., Case No. 2:06-CV-1797; *Vista Healthplan, Inc., et al., v. Cephalon, Inc., et al.*, Case No. 2:06-CV-1833; *Apotex, Inc., v. Cephalon, Inc., et al.*, Case No. 2:06-CV-2768; *Federal Trade Commission, v. Cephalon, Inc.*, Case No. 2:06-CV-2141
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4. Massachusetts Superior Court, Suffolk County Massachusetts
   Vincent Fagan, et al., v. Honeywell International, Inc., Case No. CV-04-4903-BLS2
   Affidavit regarding class certification, testimony at evidentiary hearing

5. United States District Court, Southern District of Iowa
   In re: Teflon Products Liability Litigation, MDL No. 1733, 4:06-MD-01733-REL-CFB
   Report and deposition

6. United States District Court, Eastern District of New York
   In re: Payment Card Interchange Fee and Merchant Discount Antitrust Litigation, Case No, 1:05-MD-1720-JG-JO
   Report and deposition

7. United States District Court, Eastern District of Michigan
   Pat Cason-Merenda, et al., v. Detroit Medical Center, et al., Case No. 06-15601
   Report regarding class certification and deposition

8. United States District Court, Western District of Missouri
   In Re: Bisphenol-A (BPA) Polycarbonate Plastic Products Liability Litigation, MDL No. 1967, Master Case No. 4:08-1967-MD-W-ODS
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APPENDIX C

MATERIALS REVIEWED

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